

# **A Cost Analysis of a Selected Company**

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## **ABSTRAKT**

Hlavním cílem této bakalářské práce je provést detailní analýzu nákladů ve vybrané společnosti a na základě této analýzy navrhnout opatření pro jejich optimalizaci. Zvolené téma má klíčový význam pro efektivní řízení podniku, neboť umožňuje identifikovat neefektivní procesy a adekvátně na ně reagovat. Dále umožňuje předpovídat vývoj nákladů v dalších obdobích a přijímat opatření k jejich optimalizaci. Pro dosažení stanoveného cíle je v rámci analýzy nákladů provedena jak vertikální, tak horizontální analýza. Jsou zkoumány struktury fixních a variabilních nákladů, včetně sestavení bodu zvratu pro sledovaná období a základní nákladové funkce. Součástí analýzy je i návrh členění nákladů na variabilní a fixní. Práce dále poskytuje doporučení pro další monitorování nákladů a přináší praktické návrhy pro zlepšení řízení nákladů. Tato práce tak představuje praktický návrh pro analýzu a řízení nákladů ve vybrané společnosti, který může sloužit jako užitečný nástroj pro budoucí strategická rozhodnutí a plánování.

Klíčová slova: analýza nákladů, fixní náklady, variabilní náklady, bod zvratu, nákladová funkce

## **ABSTRACT**

The main objective of this bachelor's thesis is to conduct a detailed analysis of costs in a selected company and based on this analysis, propose measures for their optimization. The chosen topic is crucial for effective business management as it allows for the identification of inefficient processes and timely response to them. Furthermore, it enables the prediction of cost developments in subsequent periods and the implementation of measures for their optimization. To achieve the set goal, both vertical and horizontal analyses are conducted within the cost analysis. The structures of fixed and variable costs are examined, including the establishment of a break-even point for the observed periods and basic cost functions. The analysis also includes a proposal for the division of costs into variable and fixed ones. The thesis also provides recommendations for further cost monitoring and offers practical suggestions for improving cost management. Thus, this thesis presents a practical proposal for cost analysis and management in the selected company, which can serve as a useful tool for future strategic decision-making and planning.

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

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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

Cost analysis is a vital tool for understanding how efficiently a business operates. While companies have diverse objectives, making a profit in the long term is a shared goal. Achieving this goal requires effective cost management, especially in today's competitive and rapidly changing market environment. Managerial accounting provides methods and tools for managing costs, which will be applied to the selected company in this thesis.

When searching for a company that manages its costs in some way or categorizes them at all, it was found that such companies are not very common today. The selected company is no exception to this trend. No methods or tools for analysing cost structures are applied in the company, and aim of this work is to rectify this and simultaneously demonstrate the importance of cost analysis. The main objective of this thesis is to analyse the costs within the selected company, including an examination of their evolution over a four-year period.

This bachelor thesis is divided into two parts: theoretical and practical. In the theoretical part, costs are described from the perspective of financial and managerial accounting. Various methods of cost classification are defined, followed by the principles of horizontal and vertical analysis. Next, cost functions and tools for cost management are described.

Following is the practical section, in which theoretical insights regarding cost analysis are implemented. The first chapter is dedicated to introducing the company, whose name is anonymized in this thesis upon the company's request. The company's introduction includes its history and current operation, as well as the development of the number of employees and the company's asset and financial structure.

The next chapter focuses on the cost analysis itself, where costs were divided according to their types, and based on this, horizontal and vertical analyses were conducted. Furthermore, costs are categorized according to their behaviour, which is a significant benefit for the company, as it has not categorized costs in this way before. Based on this, the company can plan its production volume through the break-even point or estimate costs using cost functions. This section is followed by another chapter focusing on cost modelling. It entails establishing cost functions, followed by the determination of the break-even point and calculation of the margin of safety.

The practical part concludes with an overall evaluation of the cost analysis and formulation of final recommendations for the company. This is followed by a summary of the entire analytical part and recommendations.

## **I. THEORY**

## 1 COSTS

The content of the first chapter of this thesis is basic knowledge about costs. The major differences between financial and managerial accounting are explained. Managerial accounting is further described through two different concepts.

### 1.1 Definition of costs

Costs are, according to Kocmanová (2013, 50), generally defined as the deliberate utilization of factors of production, resulting in a reduction of equity.

Horngren et al. (2012, 49) mentions that accountants characterize cost as the expenditure of a resource that is given up in order to accomplish a particular goal. As Garrison et al. (2021, 27) state that costs are a key concept in economics, for a business to be profitable, it must make a certain profit, however, the profit must exceed the value of the costs incurred.

Moreover, it is important to distinguish correctly between costs and expenses. Expenses are actual payments in cash or through a bank; costs are incurred through the consumption of resources and are not always associated with a financial payment (Novák 2018, 8).

According to Foltínová (2011, 19) monetary expression of the value of consumption of business resources is called a cost.

The concept of cost is often understood by individual users differently. External users, e.g., shareholders and creditors, have a different understanding of cost and internal users have a different understanding of cost (Drury 2015, 5). On this basis, the concept of cost is divided into financial accounting and management accounting (Popesko and Papadaki 2016, 27). Based on previous statement, costs can be categorized as:

- a. financial accounting costs,
- a. management accounting costs.

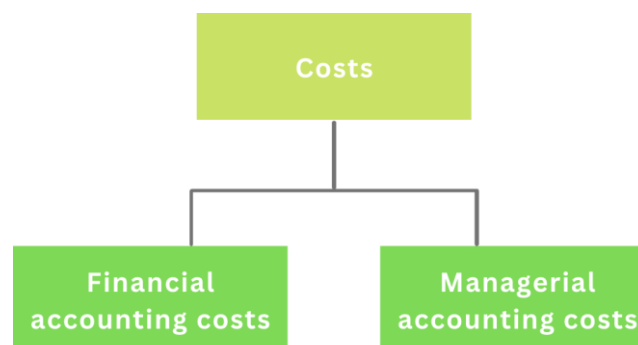


Figure 1 - Allocation of costs according to their concept (Popesko and Papadaki 2016, 27)

### **1.1.1 Costs in financial accounting**

Král (2018, 52) defines costs in financial accounting as an economic loss. This loss is evident when there is a reduction in assets or a rise in liabilities, ultimately resulting in a decrease in shareholders equity within a particular business. Simplistically, a cost in financial accounting is expressed as a resource that has been sacrificed to achieve a return on a sale. Král (2018, 52) further explains that these costs are not incurred solely in connection with the business; they may include, for example, donations, representation costs, rewards to company bodies and similar costs.

Taušl Procházková and Jelínková (2018, 18) adds that cost information is tracked for the enterprise as a whole and serves mainly for the needs of external users (investors, banks, suppliers). The outputs of information from a financial accounting perspective are shown in the balance sheet, profit and loss statement and cash flow statement (Taušl Procházková and Jelínková 2018, 18).

### **1.1.2 Costs in management accounting**

In managerial accounting costs are, according to Král (2018, 52), understood as economically allocated resources of the enterprise, specifically related to a given economic activity. The information obtained through managerial accounting is primarily intended for internal needs, serving as a basis for decision-making tasks in the areas of management, and the future development of the business (Král 2018, 52).

According to Taušl Procházková and Jelínková (2018, 18) costs in management accounting are viewed from an internal accounting perspective. They are intended for the effective management of the enterprise, using costing, budgets, and various statistical methods.

## 2 CONCEPT OF COSTS

As mentioned above, costs can be divided into management and financial concepts of costs. Following subsections describe the basic differences between financial and management accounting from the perspective of several authors.

### 2.1 Financial accounting

Král (2018, 68) defines financial concept of cost as something that is based on the application of the monetary form of the money cycle. Costs in financial accounting are used for financial accounting purposes but are inappropriate for management accounting support purposes (Popesko and Papadaki 2016, 13).

They are an expression of the inputs consumed in accounting prices. This type of cost view fully meets the needs of external users (Popesko and Papadaki 2016, 13). They represent the summary information about the enterprise, i.e., assets, receivables, liabilities, but also costs, and income - the data that must be known to manage the business. The final outputs are reflected in the financial statements known as the profit and loss account, balance sheet, and cash flow (Taušl Procházková and Jelínková 2018, 18).

Costs are expressed in accounting prices. These are the prices at which the assets were acquired. For example, if a company has purchased land worth one million CZK, then the accounting cost will be one million CZK and this cost will subsequently appear in the financial statements. Financial accounting is mandatory, and companies must report their financial information to external users such as stakeholders and creditors (Garrison et al. 2021, 2).

Hornrgren et al. (2012, 26) adds that financial accounting is past oriented and it is primarily intended to external users, these are for example investors, who are interested in collaboration with the company or in purchasing their market shares.

### 2.2 Management accounting

Management accounting, also known as managerial accounting, is focused on making information available to internal users (managers) for use within the organization. Management accounting works with economic costs, which, in contrast to the costs reported in accounting, also include so-called opportunity costs and sunk costs (Hornrgren et al. 2012, 26)

Garrison et al. (2021, 2) mention that managerial accounting is focused with providing managers with information that they can utilize inside the organization.

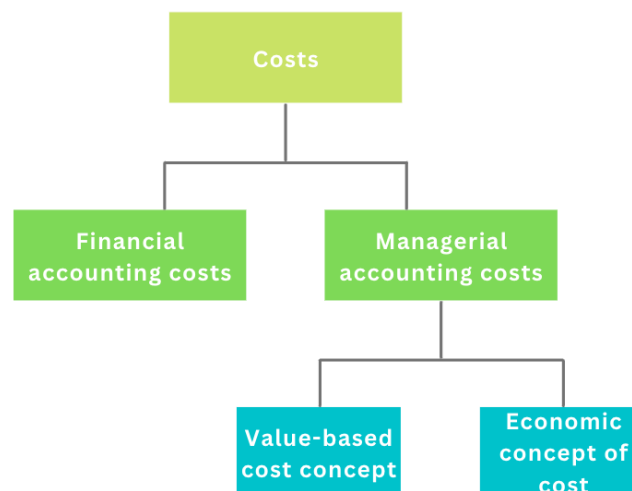
Management accounting is not mandatory, is not regulated by any legal provisions, and is intended for internal business use. Whereas financial accounting is regulated by legislation (Drury 2015, 6).

While financial accounting information is mainly intended for external entities, management accounting information is intended for managers and is not in any way regulated by external bodies. To ensure that management accounting functions properly, it should be tailored to the needs of the specific user. This means that from the outset the design of its systems, it should be personalised to the needs of a particular company or manager (Popesko and Papadaki 2016, 15).

As Garrison et al. (2021, 3) state, managerial accounting does not monitor all financial events in the company. It is selective and tracks only selected events that are relevant to the specific needs of the firm. Management accounting works with the results, they are monitored in terms of whether the plan (budget) is being met. Primarily to find out what is behind the positive or negative results and who is responsible for them. Management accounting is directly linked to financial accounting. If this relationship works within the company and managers make decisions based on relevant data and experience, managers can positively influence future developments, making the company more stable and less prone to fluctuations (Garrison et al. 2021, 3–5). Managerial accounting assists managers in three critical activities: planning, controlling, and decision making (Drury 2018, 6).

According to Popesko and Papadaki (2016, 27) the managerial concept of cost can be further divided into:

- a. value-based cost concept,
- b. economic concept of cost.



*Figure 2 - The relationship of the different approaches to the concept of cost, inspired by Popesko and Papadaki (2016, 28)*

### **2.2.1 Value-based concept of cost**

As Popesko and Papadaki (2016, 28) state, the purpose of this concept is to show the cycle of economic resources under the conditions that are valid at the present time, whereas in the financial accounting costs are valued at acquisition price. In the value-based concept, not only explicit costs are accepted, but also calculation costs are considered.

### **2.2.2 Economic concept of cost**

In contrast, Popesko and Papadaki (2016, 31 and 50) also mention the economic concept of cost can be defined as a transaction in the form of a comparison with another considered option, which is closely linked to opportunity costs, which are based on the principle of the existence of scarce resources. These costs represent the foregone benefit that was sacrificed as a result of using the economic resource for the chosen option.

Král (2018, 71–72) adds the purpose of this concept, which is to find the most cost-effective way of using costs. The economic concept serves not only to inform about real numbers, but also to make decisions about possible future ones. The economic cost concept looks at costs as both explicit and implicit costs (Král 2018, 71–72).



### 3 CLASSIFICATION OF COSTS

The third chapter of the thesis deals with costs and what are their different types. It explains the importance of monitoring of costs in a company and their basic division. This classification is further used in the practical part of the thesis in the cost analysis of the selected company.

#### 3.1 Cost classification by type

According to Popesko and Papadaki (2016, 31), this type of classification of costs is the most common approach to cost breakdown in classical financial accounting. Costs are disaggregated according to the variation of the external input consumed in the business transformation process. This classification corresponds to the financial concept of costs. Král (2018, 77) specifies basic cost types, which include:

- a. material consumption,
- b. depreciation (of buildings, machinery, production equipment, etc.),
- c. labour and other personnel costs (commissions, social and health insurance, etc.),
- d. financial costs (insurance premiums, interest paid, etc.),
- e. external service costs (rent, transport, or travel costs).

According to Král (2018, 77) there are three basic characteristics of cost types:

- these costs become the subject of display as soon as they enter the enterprise and are therefore primary,
- if costs are generated by the consumption of the product, work, or services of other entities, they are external costs,
- from the point of view of the possibility of their more detailed breakdown in the company, they are simple.

#### 3.2 Cost classification by behaviour

In terms of whether a part of the cost depends on the production volume, we distinguish three groups of costs (Drury 2015, 31–35):

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

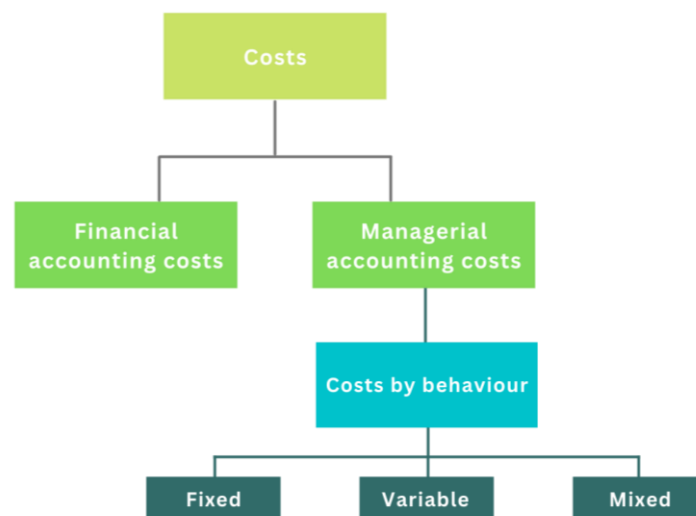


Figure 3 - Classification of costs by behaviour, inspired by Drury (2015, 31–35)

### 3.2.1 Fixed costs

According to Drury (2015, 32) the value of fixed costs remains the same across period of time. Depreciation of production facilities, CEO salaries, and leasing fees are a few examples of fixed expenditures. In addition, Martinovičová et al. (2014, 54) state few more examples of fixed cost:

- rent,
- depreciation of tangible and intangible assets,
- services of consulting companies.

Furthermore, for planning purposes, Garrison et al. (2021, 35) divide fixed costs into two categories. Fixed costs can be viewed as committed or discretionary. Committed fixed costs represent organizational investments made by the corporation over a multi-year timeframe that cannot be shortened without requiring major adjustments. Since the costs of reinstating committed fixed costs in the future are likely to be much higher than any potential short-term savings, they remain largely unchanged in the present (Garrison et al. 2021, 33–35).

On the other hand, discretionary fixed costs, also known as managed fixed costs, are typically the result of management choosing to spend money on specific fixed cost items on an annual basis. A few examples of discretionary costs, as Garrison et al. (2021, 35) mentioned, are:

- advertising,
- research,
- public relations,

- management development programs.

Discretionary fixed costs can be reduced temporarily with little negative impact on the organization's long-term objectives (Garrison et al. 2021, 35).

### 3.2.2 Variable costs

A variable cost, overall, is directly correlated with changes in the activity level. The absolute value of variable costs changes depending on changes in production volume. Garrison, et al. (2021, 33) stated these examples:

- cost of goods sold for merchandising company,
- direct material,
- direct labour, etc.

Martinovičová et al. (2014, 54) state that there are three basic types of variable costs:

- a. proportional/linear costs - total variable costs evolve in direct proportion to corporate performance, therefore variable costs do not change even per unit of output,
- b. degressive costs - production volume grows faster than variable costs, costs per unit of output decreases as production volume increases,
- c. progressive costs - production volume grows more slowly than variable costs, unit costs increase with increasing production volume.

### 3.2.3 Mixed costs

Mixed costs are also known as semi-variable costs, they consist of both a fixed and a variable component (Drury 2015, 34). For example, Garrison et al. (2021, 234) mention that while the wages of surgeons and nurses and the depreciation of equipment are fixed costs, the prices of surgical gloves, power, and other supplies are variable. Renting maintenance facilities and maintaining qualified mechanics on staff are fixed costs, but the price of replacement components, lubricating oils, tires, and other items depends on how frequently and how far the company's aircraft are flown. However, mixed costs fluctuate overall but not proportionally as the level of activity changes (Weygandt et. al. 2018, 5-5).

## 3.3 Cost classification by traceability

According to Drury (2015, 27) costs can be classified into two categories based on their traceability:

- a. direct costs,
- b. indirect cost.

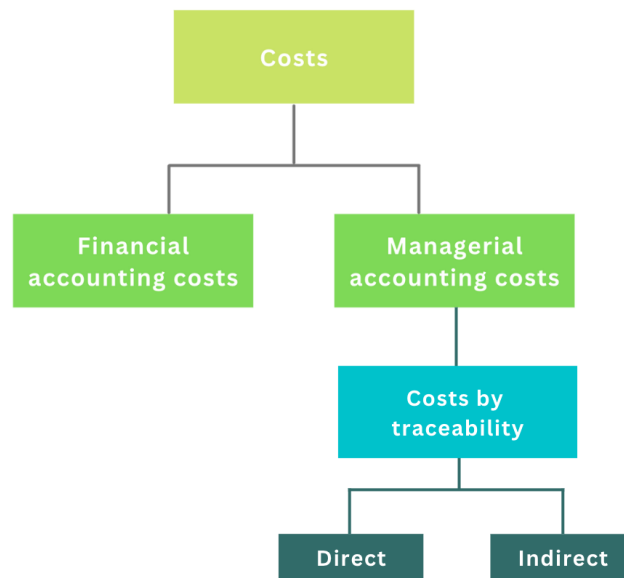


Figure 4 - Classification of costs by traceability, inspired by Drury (2015, 45)

### 3.3.1 Direct costs

Direct costs, as mentioned above, are costs that is quickly and simply linked to a given cost item. Martinovičová et al. (2014, 68) mention following examples of direct costs:

- a. direct material - basic material, semi-finished products, raw materials, etc., this material forms an integral part of the product,
- b. direct wages - mainly allowances or supplements to wages and bonuses and rewards of production workers,
- c. other direct costs - a typical examples of this group are depreciation, repairs, maintenance, social security contributions, pension etc.

As Drury (2015, 27) and Horngren et al. (2012, 50) further state **direct material costs** represent those material costs that can be uniquely identified with a particular cost object. For example, physical observation might be used in manufacturing organizations where the cost object is an outcome to determine the quantity consumed of specific items and charge direct material costs directly to them. Likewise, those costs, that may be distinctly and solely linked to a given cost object are known as **direct labour costs**. The cost of transforming raw materials into finished items is included in the direct labour cost of a certain product's production process (Drury 2015, 247).

### 3.3.2 Indirect costs

Indirect costs are another subcategory of costs according to traceability. A cost that cannot be quickly and simply linked to a specific cost item is considered indirect (Garrison et al., 2021, 4). Drury (2015, 24) mentions these examples of indirect costs:

- indirect labour,
- indirect materials,
- expenses.

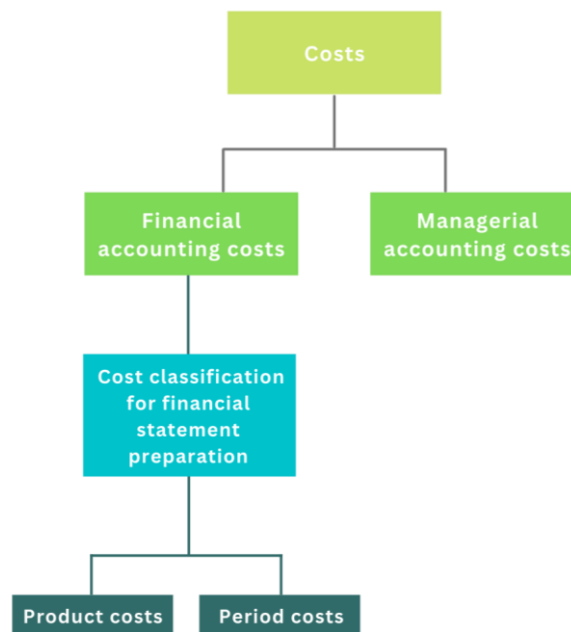
The wages of all employees whose time cannot be linked to a single product in a manufacturing organization where items are the cost object constitute **indirect labour costs**. Horngren et al. (2012, 50) mention for example the salaries of plant administrators as an indirect cost.

Instead of indirect costs, the term **overheads** is frequently used. As Drury (2015, 27) states, overheads can be further divided into:

- a. manufacturing overheads - all costs associated with production, excluding direct labour and material costs,
- b. administration overheads - any costs related to the association's overall administration which cannot be classified as manufacturing, marketing, or distribution overheads are included in administrative overheads,
- c. marketing (selling) overheads - costs required to promote and provide a good or service, these include for example promotion, salesperson salaries, and bonuses, as well as warehousing and cost of transportation, are a few examples of marketing overheads.

### 3.4 Cost classification for financial statement preparation

Companies according to Garrison et al. (2021, 5) must categorize their costs as **product costs** or **period costs** when creating a balance sheet and income statement. Moreover, this principle of cost classification is based on accrual concept, the recognition of costs and revenues relates to the period to which they are materially and temporally linked, regardless of when the actual transfer of money occurred. Drury (2015, 26) adds that the division of costs it is essential if a company wants to calculate profit estimation and value inventories and stocks.



*Figure 5 - Cost classification for financial statement preparation, inspired by Garrison et al. (2021, 30–32)*

### 3.4.1 Product costs

Product costs are also known as inventoriable costs since they are primarily allocated to inventories. They cover all expenses related to purchasing or producing a product. As Garrison et al. (2021, 31) state, product costs stay attached to a unit of a product and they endure that way while the product is waiting in stock to be sold. Once the product is sold, costs associated with the product are deducted from inventories and then compared to sales on the income statement. Popesko and Papadaki (2016, 43) add that product costs are costs whose expenditure is expressed as an increase in the future economic benefit of the asset being created.

### 3.4.2 Period costs

A period costs are costs for which the incurrence of the cost represents the consumption of the benefit embodied in the resource. Also, they are those costs that are reflected in the period under consideration by a decrease in assets or an increase in corporate debts, simultaneously with a decrease in current period profits (Popesko and Papadaki 2016, 43). According to Garrison et al. (2021, 31) period costs are included in P&L in the period in which they are made. Garrison et. al (2021, 31) also mention few examples of period costs: administrative expenses, advertising, PR etc.

### 3.5 Cost classification by management decision making

Managerial accounting defines several other types of costs that are important for management decision making. As Popesko and Papadaki (2016, 47) state these costs are characterized by the fact that they are future-focused and are not determined from the actual values recorded in the accounting system of the enterprise, but rather their value is determined from the estimates resulting from the assessment of the different options. Costs can be classified, according to Drury (2015, 23–35), by management decision making as:

- a. relevant and irrelevant costs,
- b. opportunity costs,
- c. differential costs,
- d. sunk costs,
- e. marginal costs.

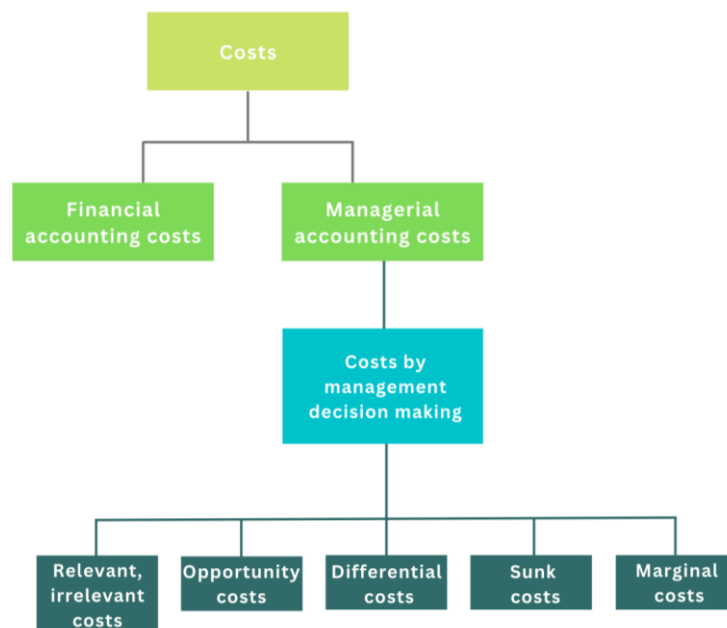


Figure 6 - Costs by management decision making, inspired by Drury (2015, 35)

#### 3.5.1 Relevant and irrelevant costs

Relevant costs are those costs in the future that will vary as a result of a choice (Drury, 2015, 34). Therefore, it could be said that relevant costs are expected (Horngren et al. 2012, 415).

Moreover, Král (2018, 94) states that relevant costs are important from the point of view of a given decision, because they can change when different variants of the decision are implemented.

In contrast the amount of irrelevant costs does not change when the decision is changed, hence they are irrelevant to the decision (Král 2018, 94). Therefore, costs that will not be impacted by the decision are irrelevant costs (Drury 2015, 34).

Popesko and Papadaki (2016, 48) define relevant costs as costs whose value changes after the acceptance/rejection of a particular decision. Conversely, irrelevant costs remain constant.

### **3.5.2 Opportunity costs**

Opportunity costs can only be expressed when multiple decision options are considered. According to Popesko and Papadaki (2016, 50), these costs are divided into 2 groups as follows:

- a. explicit costs - they are recorded in the accounting system by their exact magnitude,
- b. implicit costs - not recorded or recorded in accounting in a different amount.

According to Drury (2015, 35) an opportunity costs are those costs account for the opportunity that is lost or sacrificed, this occurs when a person or business is choosing one course of action and forgoing another. Because opportunity costs do not include funds, they are typically unable to be recorded in the accounting system (Horngren et al. 2012, 425).

Čechová (2011, 67) states that these are the costs that are generated as an effect left unused from other potential alternatives. Company, when making some decision, always has several options to choose from. These individual options are mutually exclusive and therefore cannot be implemented all at once. It is the opportunity cost that serves as an aid in deciding whether to use a given option because it is suitable for the company or whether, on the contrary, it is better to choose an alternative solution (Čechová 2011, 67).

### **3.5.3 Differential costs**

In any decision that a business experiences, each available option from which they must choose has costs and benefits that must be compared with the costs and benefits of different alternatives (Horngren et al. 2012, 421). A differential cost, also known as incremental cost is future cost that varies between any two options. This is the reason why all differential costs are relevant, when deciding (Garrison et al. 2021, 39).

### **3.5.4 Sunk costs**

According to Horngren et al. (2012, 415) these costs represent the price of resources that have already been purchased, and their overall amount will not change depending on the



decision made. Sunk costs have already been incurred because of a past decision and cannot be changed by a decision made today or in the future (Drury 2015, 35).

However, as Garrison et al. (2021, 40) state, sunk costs are not differential costs because they cannot be altered by any decision. Therefore, they must always be disregarded because only differential costs matter when deciding.

### **3.5.5 Marginal costs**

The cost of producing one unit of product is called marginal cost. Marginal costs determine how much money needs to be spent to increase production by one unit. In other words, they determine how total cost changes if one more unit of a given product is produced. This principle is similar to differential costs, but the key difference between these two is that differential cost indicates extra cost coming from a set of extra units of output, but marginal cost indicates extra cost of only one additional unit of output (Drury 2015, 37–38).

## 4 RATIOS

Ratios are used to identify development trends and for percentage analysis of components. The following two analyses are used (Knápková et al. 2013, 67):

- horizontal analysis,
- vertical analysis.

According to Martinovičová et al. (2019, 172–175), absolute ratios analyse critical financial statement items typically over a 5–10-year period. Another function of these ratios is that they make it possible to analyse the firm's asset and capital structure.

### 4.1 Horizontal analysis

Knápková et al. (2017, 71) refer to horizontal analysis as the examination and comparison of changes in the monitored items of financial statements over time, it is the so-called observation of trends. Knápková et al. (2017, 71) mention following formula:

$$\textit{Absolute change} = \textit{Amount in comparison year} - \textit{Amount in a base year}$$

Then, this absolute change is transformed into a percentage, as the following formula illustrates:

$$\begin{aligned} \textit{Absolute change} (\%) \\ = \frac{\textit{Amount in comparison year} - \textit{Amount in a base year}}{\textit{Amount in a base year}} \times 100 \end{aligned}$$

Scholleová (2017, 167) adds that horizontal analysis assesses the stability and development of all items and, in addition, provides the answer to the following question:

- How does the item change over time?

### 4.2 Vertical analysis

Vertical analysis is based on percentage analysis of financial statements, showing us the percentage of individual items to the total (Synek et al. 2011, 350).

Moreover, Scholleová (2017, 167) adds the purpose of the vertical analysis, which is to determine:

- the proportion of total assets held by each asset,
- the proportion of total liabilities accounted for by each source of financing,

- the proportion of profit and loss account items to revenue.

Vertical analysis according to Scholleová (2017, 167) should provide us answers to following questions:

- Do the proportions of individual items change as the firm develops?
- Is the structure of asset, capital and profit generation stable or is there a development?

## 5 COST MODELLING

This chapter focuses on the basic cost modelling tools, which are cost functions. Both the types of cost functions and the methods used to determine cost functions will be explained.

### 5.1 Cost function

Synek et al. (2011, 90) define the cost function as a mathematically expressed relationship between costs and the volume of production in the company. As mentioned before, Martinovičová et al. (2014, 54) states three types of variable costs, whose absolute value changes depending on changes in production volume, these are: proportional costs, degressive costs and progressive costs. Martinovičová et al. (2014, 59) also add that the cost function is used in management practice both short-run and long-run.

Taušl Procházková and Jelínková (2018, 25) further state that the cost function can capture the behaviour of costs. However, they point out that it is very important to note that costs behave quite differently in the short run and the long run. Use of the cost function can be used, for example, in financial planning.

According to Taušl Procházková and Jelínková (2018, 26) the basic formula of the cost function is:

$$C = FC + h * Q$$

- C = total costs
- FC = fixed costs
- h = penny indicator (variable costs per one monetary unit)
- Q = production volume in monetary units

Penny indicator of variable costs can be calculated as the ratio of total variable costs incurred to sales (production volume in monetary units)

$$h = \frac{VC}{Q}$$

(Popesko and Papadaki, 2016, 46).

#### 5.1.1 Short-run cost function

According to Synek et al. (2011, 91) the short-run cost function represents the development of costs over a short period, for example, a period when variable costs (the amount of work performed, or raw materials consumed) can be modified. However, the fixed costs (buildings, machines, etc.) cannot be modified anymore.

### 5.1.2 Long-run cost function

The long-run cost function is based on a more extended period, i.e., the period over which fixed and variable costs can be changed. This is because here, fixed costs are not used, but we consider the average of total costs and marginal costs.

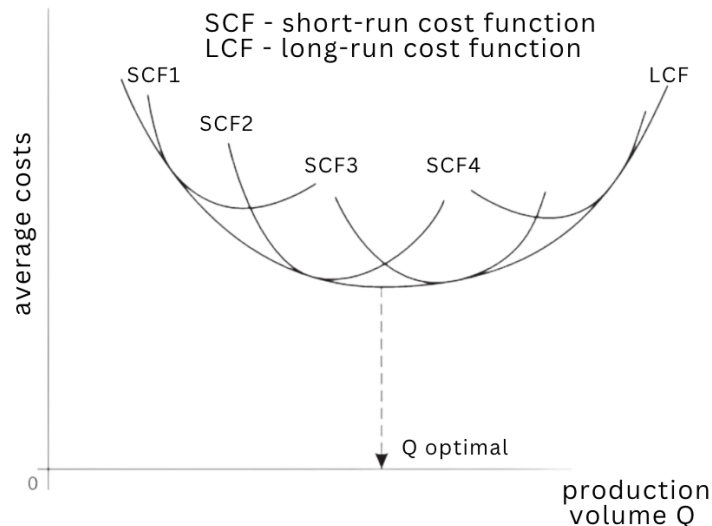


Figure 7 - Long-run cost function (Synek et al. 2011, 92)

Martinovičová et al. (2014, 59) note that the long-run cost function is made up of parts of short-run functions and is typically U-shaped.

Synek et al. (2011, 92) explain that the U-shape arises due to the initially decreasing long-run cost function as the volume of production increases. Once the long-run cost function reaches its lowest value, we reach the point where the minimum average cost and the highest production efficiency are achieved. It is from this point onwards that the function starts to grow due to, for example, the difficulty of coordinating management.

## 5.2 Methods for determining cost functions

Often the enterprise is faced with the fact that it cannot accurately determine fixed and variable costs. Therefore, there are specific methods that can derive the individual cost parameters functions. Synek et al. (2011, 94) rank among classification analysis, two-period method, graphical method (point diagram) and regression and correlation analysis.

### 5.2.1 Classification analysis

The basis for constructing a cost function using this method is the correct breakdown of costs in relation to changes in production volume. As mentioned in the previous chapters, this is a breakdown of costs into fixed and variable costs. Synek et al. (2011, 94) further state that

the breakdown of costs may vary from company to company (even within the same industry), as the demonstration of costs is individual. Therefore, classification analysis can only be properly performed by a person who is familiar with the cost situation of the enterprise.

### 5.2.2 Two-period method

Taušl Procházková and Jelínková (2018, 28) describe this method as one that is based on the determination of a two-period cost function. They recommend selecting the period with the smallest volume and the largest volume of production. If there happens to be an exceptional event in the period selected that has had an impact on production volume, this period should be eliminated. If this period were not eliminated, the cost function would be distorted and therefore inaccurate. The solution to such a situation is to choose the closest possible period to the one that has been eliminated. According to Synek et al. (2011, 95), the identified data will be substituted into equations for the development of total costs:

$$N_1 = a + b * Q_1,$$

$$N_2 = a + b * Q_2,$$

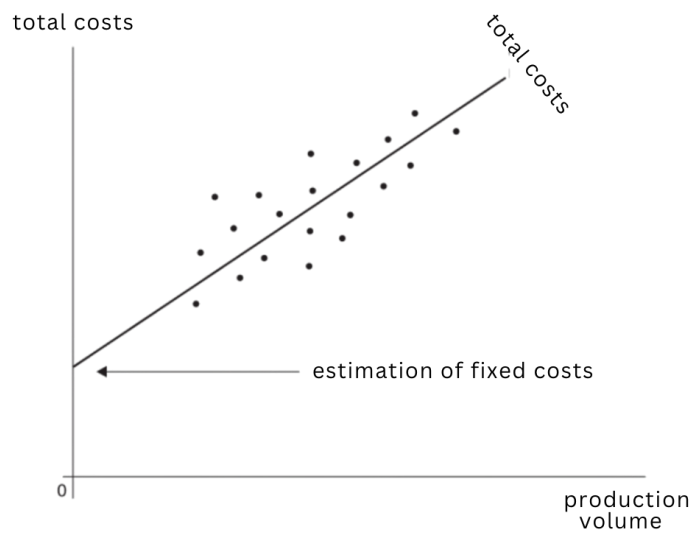
Where:

- $N_{1,2}$  = total costs,
- $a$  = fixed costs,
- $b$  = variable costs,
- $Q_{1,2}$  = the volume of production.

However, Synek et al. (2011, 95) mention that the disadvantage of this method is the dependence of the results on only two periods. Therefore, he recommends combining this method with the graphical method, which will be further described below.

### 5.2.3 Graphical method

According to Synek et al. (2011, 96) the graphical method helps us to detect outliers that distort the function. In the graphical method, the cost function can be derived from the so-called point diagram, where production volumes are plotted on the *x-axis* and costs on the *y-axis*. Then each of the pairs is represented by a point. If all the points occur around some curve or line that needs to be plotted, then there is a relationship between cost and volume of production. It is also possible to estimate the fixed costs by intersecting the line with the *x-axis*.



*Figure 8 - Point diagram (Synek et al. 2011, 98)*

#### **5.2.4 Regression and correlation analysis**

The main advantage of this method is that it can also work with nonlinear cost function, which was not the case with previous methods (Synek et al. 2011, 97). Kocmanová (2013, 123–125) adds that this method ranks among the most reliable. It can determine the reliability of a function and detect errors in the function.

## 6 COST MANAGEMENT TOOLS

Nowadays, many tools that can be used to manage costs in a company exist. In this bachelor's thesis, the tools that are most common in practice will be mentioned, and some of these tools will be used in the practical part of this thesis. These tools are:

- Cost-volume-profit analysis (CVP)
- Contribution margin ratio
- Break-even point analysis (BEP)
- Operating leverage
- Profit and loss

### 6.1 Cost-volume-profit analysis (CVP)

The relationship among changes in activity (i.e., output) and changes in overall revenue from sales, costs, and net profit are examined using cost-volume-profit analysis (Horngren et al. 2012, 85). This analysis according to Cafferky and Wentworth (2014, 2) can be used if a company wants to solve the following problems:

- determining the minimum number of transactions to complete per day, week etc.,
- calculating the impact of changing prices and costs,
- deciding to modify the composition of a product.

CVP analysis is all about knowing how to balance volume, profitability, and costs. Decisions on what products to offer, how to price them, and how to manage an organization's structure will be determined according to the results (Horngren et al. 2012, 85).

Skousen and Walther (2010, 21–26) mention that the break-even point and volume needed for achieving desired income levels are determined using methodologies that rely on CVP. This kind of analysis is predicated on the idea that the firm's fixed costs will, overall, stay constant throughout a broader range of production volumes that the company is anticipated to encounter a specific period. Thanks to this analysis we can identify the **break-even point** (VanDerbeck et al. 2016, 534).



## 6.2 Contribution margin ratio

The term contribution margin ratio is often used in CVP analysis. As mentioned before, contribution margin is the relation, using percentages, between contribution margin and sales, this ratio can be according to VanDerbeck et al. (2016, 543) calculated as follows:

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

## 6.3 Break-even-point analysis

Martinovičová et al. (2014, 62) and VanDerbeck et al. (2016, 535) define the break-even point as the volume of performance at which the revenue earned covers fixed and variable costs. At this level of output, total revenues equal total costs and the firm makes no profit or loss (Horngren et al. 2012, 90). The calculation of the break-even point is very important for management as it is used for many important decisions. The company must therefore have information on the amount of output sold is covered by variable and fixed costs and where the profit margin begins.

The term break-even point is usually used to refer to the level of production output that can ensure the payment of fixed as well as variable costs. In other words, it is reaching a point from which products not only cover costs but also start to contribute a profit (Popesko and Papadaki 2016, 43). According to Drury (2018, 176), the following equation could be used to represent the break-even point:

$$\text{Break - even point in units} = \frac{\text{Fixed costs}}{\text{Contribution per unit}}$$

Where contribution per unit can be expressed as:

$$\text{Contribution per unit} = \text{selling price} - \text{variable costs}$$

According to VanDerbeck et al. (2016, 535) “break-even analysis relies on segregating costs according to whether they are variable or fixed within a relevant range.”

The break-even equation might be also mathematically defined as follows:

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

Where, contribution margin ratio is the relation, using percentages, between contribution margin and sales (VanDerbeck et al. 2016, 536–537).

The break-even point can be used not only to establish the minimum volume of production at which the enterprise can cover all costs but also to calculate the volume of production that is needed to meet a certain profit (Synek et al. 2011, 138).

To determine the break-even point (BEP) for a company with diverse production, it's necessary to modify the break-even point calculation formula. This adjustment involves incorporating the penny indicator ( $h$ ), which is derived by dividing variable costs by total revenues over a designated period (Chobotová 2010, 91). The modified formula is provided below:

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

$$h = \frac{\text{Variable costs}}{\text{Total revenues}}$$

### 6.3.1 Margin of safety

Margin of safety shows the amount that sales can drop before the business breaks even. This margin shows the number of outputs that can be reduced while the company still makes a profit (Drury 2015, 176). Margin of safety according to Drury (2015, 178) could be calculated as follows:

$$\text{Margin of safety} = \frac{Q_s - BEP}{Q_s}$$

where  $Q_s$  expresses the value of the output achieved in monetary or natural terms. If the safety margin of safety is too low, the firm should intervene. For example, the firm may aim to increase sales, increase production or, conversely, reduce costs (Synek et al. 2011, 138–139).

Garrison et al. (2021, 207) and Horngren et al. (2012, 96) propose a formula for determining the margin of safety:

$$\text{Margin of safety (\$)} = \text{Total budgeted (or actual) sales} - \text{Break – even sales}$$

## 6.4 Operating leverage

Operating leverage is one of the cost-accounting methods. Operating leverage assesses how much a company or project can raise operating income by raising revenue. As Synek et al. (2011, 149–150) mention, the total costs and total revenues change when a company switches to a higher level of automatization, mechanization and robotization. By switching to a higher level of previously mentioned concepts, they increase the proportion of fixed costs in total costs by replacing variable costs with fixed ones. It is the operating leverage that is used to determine the percentage of fixed costs in the total costs of the enterprise.

Drury (2015, 184) suggests that operating leverage serves as a gauge of the sensitivity of profits to potential changes in sales. In essence, it measures how profits would be impacted by any alterations in sales volume.

Moreover, Garrison et al. (2021, 210–214) add that when operating leverage is substantial even a relatively small change in sales will cause a large change in operating income. This phenomenon is referred to as the **degree of operating leverage** and can be calculated according to Garrison et al. (2021, 210) as:

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

Or Synek et al. (2011, 150) use a slightly different formula of degree of operating leverage and that is:

$$\text{Degree of operating leverage} = \frac{\% \text{ of change in operating income}}{\% \text{ of change in sales}}$$

## 6.5 Profit and loss

After all expenses and deductions have been made, the net profit is shown. The net profit is the difference between the total revenue and the total costs of the enterprise. If the difference is positive, it is a profit; if the result is negative, it is a loss.

Martinovičová et al. (2019, 51) emphasize the profit, as it is the main financial resource of the company and fulfils the following functions:

- function of the criterion – the amount of the profit is a criterion for making decisions on all issues of the company's economy, e.g., production volume, new products, and investments,
- development function - profit is the main source of financial resources for further development of the enterprise,
- motivational function - profit is the fundamental motivation of the business.

## 7 SUMMARY

The theoretical part of the thesis is developed based on literary sources focusing on cost-related issues. The result of this research consists of 6 chapters, each addressing different aspects related to costs.

The first chapter deals with the concept of costs, which is explained from the perspective of financial and managerial accounting. From the standpoint of financial accounting, costs are perceived as an expression of the inputs consumed at accounting prices. From a managerial perspective, however, costs are perceived as economically expended resources allocated to the company's activities. Both concepts of costs differ significantly and thus require explanation, which is provided in the second chapter of the theoretical part of the thesis.

The classification of costs forms the second chapter, which is divided into several subsections. Costs are categorized according to their type, behaviour, traceability, financial statement preparation and management decision-making. The most commonly used classification among businesses is the classification by type, which can be seen in the income statement. An important classification, although less utilized by businesses, is the classification of costs according to their behaviour. This classification divides costs into variable, fixed, and mixed, and is a very important tool for cost management.

The following chapter focuses on cost modelling, where cost functions were first described, divided into short-term and long-term, and then assembled using classification analysis, two-period method, graphical method and regression and correlation analysis. Cost functions are used to estimate the future development of costs.

The fifth chapter deals with the principles of horizontal and vertical analysis. These ratios are used to identify development trends and for percentage analysis of components. In the final chapter, the cost-volume-profit analysis was defined, along with the break-even point, margin of safety, operating leverage, and profit and loss. The mentioned tools for cost management enable the company to predict and, more importantly, influence the future development of its costs.

The knowledge gained from developing the theoretical part will be used as the basis for creating the practical part of the bachelor's thesis.

## **II. ANALYSIS**

## 8 INTRODUCTION OF THE COMPANY

The introduction of the practical part of the bachelor thesis is devoted to the introduction of the selected company. Due to the requests of the company owner, the company name and selected information is not published. However, its history and development up to the present is described. Furthermore, this chapter focuses on the organizational structure of the company, the development of the number of employees and the development of economic indicators for the period under review. A company's accounting year is always the year from 1 January to 31 December. This methodology is used throughout the bachelor thesis.

### 8.1 General information about the company

**Company name:** XY, s.r.o.

**Business entity:** Společnost s ručením omezeným

**Year of foundation:** 2019

**Business scope (CZ-NACE):**

25 - Manufacturing of metal structures and metal products

26.11 - Manufacturing of electronic components

33.2 - Installation of industrial machinery and equipment

43 - Specialized construction activities

46 - Wholesale trade, except for motor vehicles

47 - Retail trade, except for motor vehicles

52.10 - Warehousing

52.24 - Handling of goods

72.11 - Research and development in natural and technical sciences

28 - Manufacturing of machinery and equipment

27 - Manufacturing of electrical equipment

31 - Manufacturing of electrical machinery and equipment

43.21 - Installation of electric underfloor heating

43.2 - Electrical installation, plumbing, and other construction installation works

43.21 - Electrical installations

42.22 - Construction of engineering networks for electricity and telecommunications

#### 8.1.1 History of the selected company

The owner of the selected company has been working as a natural person in the field of electrical installations and automation since 2013. The owner's vision was to establish a

company that would be able to provide the client with all electrical installation work with a focus on energy efficiency and automation. Thus, it was established in 2019.

The company started as an electrical company only, focusing on Loxone smart homes. In 2020, they also started selling custom electric underfloor heating, and their business started to grow. In the following years, sustainable issues became very popular, so the company decided to be part of the energy market as well. Consequently, in 2021 the engineering and installation of photovoltaic power plants was included.

As time went on, the company also started to offer professional and expert opinions to help people who were dissatisfied with the installation of a power plant from another company. Lastly, as the world began to embrace electromobility, the company partnered with Teltonika IoT Group and their business also included the sale of charging stations designed for electric vehicles.

### 8.1.2 The company at present

The company is constantly engaged in the above-mentioned activities. Now the company's main goal is to combine technologies so that the resulting solution is as simple as possible, brings the greatest benefit as well as saving costs. They can design a tailor-made solution for each client, giving them a competitive advantage. They also focus on the aesthetic aspect of the solution and the resulting design effect. They collaborate with architects and designers in the design process. They work on low-cost projects as well as luxury residences, commercial buildings, industrial solutions, and development projects. The company is growing at a rapid pace.

## 8.2 Employee development

In 2019, when the company was founded, they had a total of 2 employees. Subsequently, there has been an increase in the number of employees, mainly due to the larger number of contracts. Interestingly, those employees who were present at the company's founding are still part of the team today. Over the years, the company has discovered different business ventures, and so it continues to grow.

	2019	2020	2021	2022
<b>Number of employees</b>	2	5	8	12

*Table 1 - Development of the number of employees (own creation)*



### 8.3 Analysis of asset and financial structures

This chapter deals with the asset and financial structure of the company in the selected period under examination. The data presented in the following chapter are obtained from the balance sheet.

#### 8.3.1 Asset structure

Table 2 provides data on the asset structure of the company. The asset structure consists of the total assets of the company, including non-current assets, current assets and asset accruals.

	2019	2020	2021	2022
<b>Assets</b>	-32 299	1 903 620	3 783 245	14 763 712
<b>Non-current assets</b>	0	0	601 350	2 002 748
<b>Non-current tangible assets</b>	0	0	601 350	2 022 748
<b>Non-current intangible assets</b>	0	0	0	0
<b>Current assets</b>	-646 299	1 265 620	3 156 483	12 732 477
<b>Inventories</b>	0	0	305 094	10 747 457
<b>Receivables</b>	-1 254 071	926 985	2 040 690	831 378
<b>Cash and cash equivalents</b>	607 772	338 635	810 699	1 153 642
<b>Accruals</b>	614 000	638 000	25 412	28 487

*Table 2 - Development of the asset structure (in CZK, own creation)*

The data from Table 2 indicates that the development of the balance sheet total of the company's assets exhibits a growing trend. During the observed period, there was an increase in assets by more than 16 million CZK. The largest increase was recorded in the year 2022. Only current assets contributed to the total assets in the years 2019 and 2020. However, this trend was disrupted in 2021 and 2022 when non-current assets also began to contribute to the share of total assets, as the values of non-current tangible assets started to rise.

Another monitored item was non-current assets. Its value remained at zero in the years 2019 and 2020. Nevertheless, this changed in 2021 when the company experienced an increase in a non-current tangible asset. This occurred because the owner felt the necessity

to attend face-to-face meetings with clients throughout the entire Czech Republic. The company purchased a company car to enable the owner to do so.

However, one of the most significant changes the company has seen was in 2019 and 2020. As the table above shows the company reported negative receivables in 2019, meaning that the business owed more money to its creditors than it had available in cash. As negative receivables can put a strain on a company's finances and make it difficult to meet other obligations, it can also damage relationships with creditors and suppliers. Luckily, this scenario did not unfold, and the receivables are already in positive figures the following year, indicating that the company learned its lesson in the first year and handled its finances correctly.

It is also important to mention that the level of inventories was zero in the first two years, primarily because the company did not have suitable storage space. However, that is not the sole reason for the zero inventories. It was also the company's strategy. The goal in the first two years was to order precisely the amount that would be sold; the company did not want to hold any inventories during this period. Over time, this approach changed. In 2021, the company identified a suitable location for storing inventories, leading to a substantial increase. In 2022, inventories rose to just under 11 million CZK.

### 8.3.2 Financial structure

	2019	2020	2021	2022
<b>Liabilities &amp; Equity</b>	-32 299	1 903 620	3 783 245	14 763 713
<b>Equity</b>	-133 517	16 673	449 503	1 317 174
<b>Share capital</b>	1 000	1 000	1 000	1 000
<b>Profit or loss for the previous period</b>	0	-134 517	15 672	448 503
<b>Profit or loss for current period</b>	-134 517	150 189	432 831	567 671
<b>Liabilities</b>	101 218	1 886 947	3 333 742	13 446 539
<b>Long-term liabilities</b>	0	0	891 283	2 035 503
<b>Short-term liabilities</b>	101 218	1 886 947	2 442 459	11 411 036

Table 3 - Financial structure (in CZK, own creation)

The development of the company's financial structure over the years reveals significant changes. In 2019, liabilities and equity were in the negative, which may indicate financial instability and uncertainty. However, there was a substantial shift in 2020 and total liabilities and equity increased. This trend continued in 2021 and 2022, when the financial structure reached positive numbers.

A more detailed analysis reveals that the largest part of equity each year is the profit or loss for current period, which may be indicative of the company's positive financial performance and ability to generate profits. Especially in 2021 and 2022, there is a significant growth in equity, which indicates the prosperity of the company.

Liabilities accounted for the majority of the financial structure, with equity significantly lower than liabilities in all years. Although liabilities are predominant, it is important to note that equity has increased each year, reflecting the profitability and success of the business.

During the first two years, the company had zero long-term liabilities. The share capital has remained constant over the years and has not increased or decreased during the years under review. However, in 2021 and 2022 there is a significant increase in long-term liabilities, which can be attributed to the company's decision to use bank loans to finance its activities. The company used these funds mainly for expansion and long-term investments.

## 8.4 Development of economic indicators

In the following chapter, the development of the company's total revenue, total costs and profit or loss for the years under review will be examined.

	2019	2020	2021	2022
<b>Revenues</b>	708 181	5 571 363	10 604 819	3 249 636
<b>Inventory change</b>	x	x	x	6 899 999
<b>Costs</b>	842 698	5 413 574	10 040 789	9 508 433
<b>Profit or loss before taxes</b>	-134 517	157 790	564 030	641 202
<b>Taxes</b>	0	7 600	131 100	73 530
<b>Profit or loss after taxes</b>	-134 517	150 190	432 930	567 672

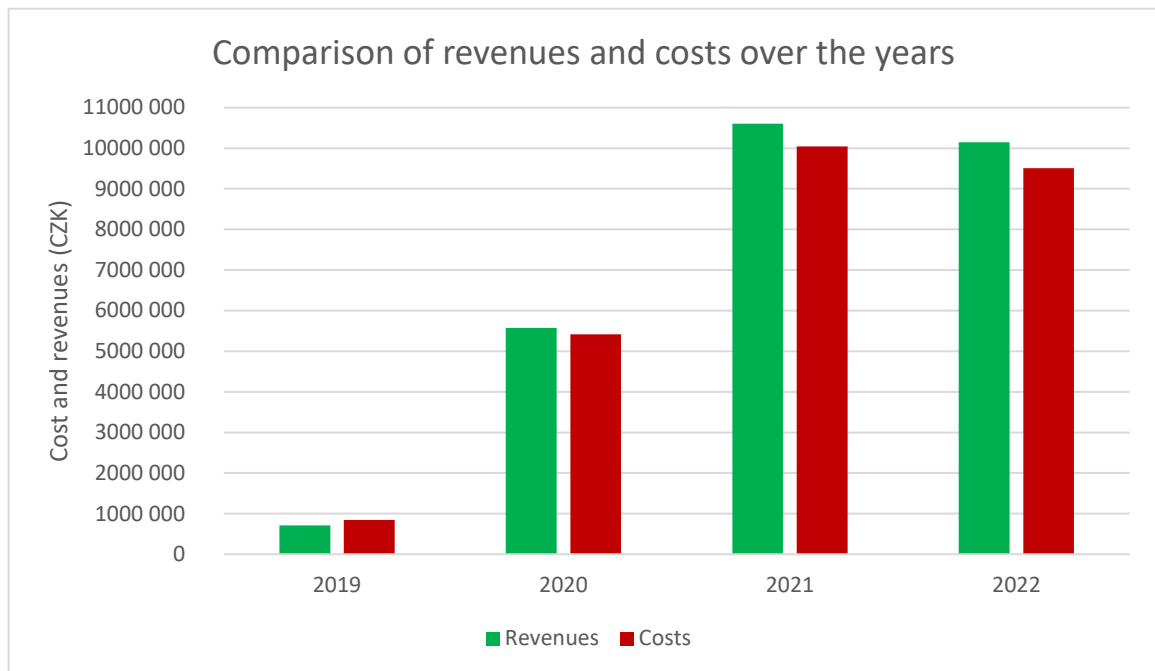
*Table 4 - Development of economic indicators (in CZK, own creation)*

All information is taken from the profit and loss statements provided by the company for the purpose of this thesis. Revenue includes sales of products and services, sales of goods, other financial income, other operating income, and interest income. Costs include costs related to the sale of goods, material and energy consumption, services, personnel expenses, other operating costs, interest on borrowings, and financial expenses.

At the beginning of the period under review, i.e. in 2019, when the company was founded, the company did not show a satisfactory profit. This indicates that the company was not selling its services and materials effectively. This was mainly caused by the fact that they were more focused on getting clients to accumulate references, but a lot of the contracts were unprofitable. It is important to mention why costs significantly exceed revenues. The sum of the production consumption costs (materials, energy, other non-consumable supplies) and consumption of supplies from external suppliers (products, outputs and services) was very high, thus exceeding revenues. During the initial year, the company did not have a strong framework for purchasing materials and products from external suppliers, which led to less favourable prices.

The year 2020 is a major milestone for the company, as its profit or loss moves into positive numbers. The company maintains positive profit in the following years, with their profit or result not falling into negative figures. The highest revenues were attained by the company in 2021, accompanied by the highest costs, particularly consumption costs and the associated COGS (cost of goods sold). The year 2022 proved to be somewhat eventful for

the company, as can be seen in the table above. Additionally, there is a line item for inventory status changes. In this year, products were transferred to the warehouse but were not invoiced within the same year. Therefore, these are expected revenues, and it is important to mention this item. It is therefore added to the total revenues, as shown in Graph 1 below.



*Graph 1 - Comparison of revenues and costs over the years (own creation)*

Based on Table 4, Graph 1 was created to provide a more detailed overview of the development of revenues and costs. The graph clearly shows that since 2020, revenues have always exceeded costs.

## 9 A COST ANALYSIS

In the following chapter, a detailed analysis of the cost structure is conducted. Firstly, attention is devoted to the classification of costs by type. Based on this division, a horizontal and vertical analysis is carried out. In the next part of chapter 9, costs are classified by behaviour into fixed and variable. The company, unfortunately, performs only one categorization of its costs - classification based on cost type. The classification of costs by behaviour is not carried out by the company, thus, the company does not split the costs into fixed and variable. However, with the assistance of the accountant and the CEO of the company, it was possible to achieve this categorization. All information for the cost analysis is derived from the profit and loss accounts from the particular periods or has been obtained from the company's internal documents.

### 9.1 Analysis of costs by type

This chapter deals with the breakdown of costs by type that is most commonly used in practice. Table 5 is based on the analysis of the profit and loss statement for the observed 4 years. This classification is followed by horizontal and vertical analysis.

In Table 5, revenues are intentionally included to assess their development in relation to the consumption costs, as these two items are closely related, and often the relationship between them is the first indicator of a problem.

	2019	2020	2021	2022
<b>Consumption costs</b>	825 572	5 166 989	9 609 261	7 584 514
Costs of goods sold	7 571	0	5 786 006	92 336
Material and energy consumption	424 882	3 493 939	2 448 328	5 362 416
Service consumption	393 119	1 673 050	1 374 927	2 129 762
<b>Personal costs</b>	5 700	170 430	120 269	1 237 478
Wages	5 600	170 030	117 200	892 841
Costs of social security and health insurance and other	100	400	3 069	344 637
<b>Depreciation</b>	0	0	240 078	135 654

<b>Other operating costs</b>	0	1 895	42 806	10 462
Taxes and fees	0	1 440	31 010	4 595
Various operating costs	0	455	11 796	5 867
<b>Interest payable and similar costs</b>	0	0	0	126 785
<b>Other financial cost</b>	11 426	74 260	28 375	413 540
<b>Income tax</b>	0	7 600	131 100	73 530
<b>Total</b>	<b>842 698</b>	<b>5 421 174</b>	<b>10 171 889</b>	<b>9 581 963</b>

*Table 5 - Analysis of costs by type (in CZK, own creation)*

Based on the developed table of analysis of costs by their type, it can be seen that the largest amount from the total costs is represented by consumption costs, which include costs of goods sold, material and energy consumption and service consumption. It is a typical phenomenon characteristic of manufacturing companies, including the selected company. If consumption costs increase in proportion to revenues, as was the case in 2020 and 2021, then it is acceptable. However, if revenues decline more rapidly than performance consumption (2019), or conversely, if performance consumption grows much faster than revenues, a significant problem arises, as it may indicate that the company has to incur increasingly higher costs to generate revenues.

Another significant component of costs consists of personal costs, which grew each year alongside the increasing number of employees. Personal costs include not only wages but also costs for social security, health insurance, and others. Wages exhibited annual growth due to wage indexation, which leads to yearly increases, potentially positively impacting employee motivation. Optimally motivated employees then contribute to increasing the prosperity of the company, which should be considered as the fundamental goal of every company. The company's costs are also affected by income tax, which recorded fluctuating values.

Depreciation, which accrues in 2021 and 2022 with the acquisition of non-current assets, is also a significant part of the costs. Other financial costs have been negligible in the first three years but increased significantly in 2022, this was mainly due to exchange rate losses.

A minority portion of the cost consists of other operating expenses, interest payable and similar costs.

## 9.2 Horizontal and vertical analysis

The following subsection illustrates a vertical and horizontal analysis of the company's costs over the course of four years based on the classification by cost type.

### 9.2.1 Vertical analysis

The vertical cost analysis examines how much of the company's total costs are accounted for by individual items.

	2019	2020	2021	2022
<b>Total</b>	100	100	100	100
<b>Consumption costs</b>	97,97	95,31	94,47	79,15
Costs of goods sold	0,93	0	60,21	1,22
Material and energy consumption	51,46	67,62	25,48	70,7
Service consumption	47,61	32,38	14,31	28,08
<b>Personal costs</b>	0,68	3,14	1,18	12,91
Wages	98,25	99,77	97,45	72,15
Costs of social security and health insurance and other	1,75	0,23	2,55	27,85
<b>Depreciation</b>	0	0	2,36	1,42
<b>Other operating costs</b>	0	0,03	0,42	0,11
Taxes and fees	0	75,99	72,44	43,92
Various operating costs	0	24,01	27,56	56,08
<b>Interest payable and similar costs</b>	0	0	0	1,32
<b>Other financial costs</b>	1,36	1,37	0,28	4,32
<b>Income tax</b>	0	0,14	1,29	0,77

Table 6 - Vertical analysis of costs (own creation, in %)



As mentioned in the previous chapter, the largest share of total costs is represented by consumption costs. It constitutes more than 70% of the total costs in all 4 years under consideration. From the previously mentioned consumption costs, material and energy consumption formed the highest percentage, ranging from 25% to 70.7%. However, this is not surprising considering that the company is a manufacturing company. Another significant component of consumption costs consisted of costs incurred for services, with values ranging from 14% to 47% during the observed years. Costs incurred for goods sold constituted almost negligible part of the costs in almost all years, with values around 1%; however, in 2021, the value exceeded 60%. The company expanded its business into the installation of photovoltaic power plants in 2021, hence the high COGS, the direct material cost and transportation cost for such specific products as inverters, batteries, and panels have very high costs. Especially when it comes to imports, for instance, from Japan, where maritime transportation is required.

The proportion of personal costs is accompanied by significant percentage changes over the 4-year period. In the first three years, the share of personal costs is less than 4% of the total costs; however, in 2022, there is a significant increase to 12.91%. This increase was caused by the growth in the number of employees; in 2022, the company notably hired engineers for project development, leading to a substantial increase in personal costs.

In the last year, there was also an increase in the item other financial expenses, as the company had to incur exchange rate losses.

### 9.2.2 Horizontal analysis

The horizontal cost analysis tracks over time the percentage increase or decrease of the monitored items relative to the year under review.

	2019/2020	2020/2021	2021/2022
<b>Total</b>	543,31	87,63	-5,80
<b>Consumption costs</b>	525,87	85,97	-21,07
Costs of goods sold	-100,00	100,00	-98,40
Material and energy consumption	722,33	-29,93	119,02
Service consumption	325,58	-17,82	54,90
<b>Personal costs</b>	2890,00	-29,43	928,93
Wages	2936,25	-31,07	661,81
Costs of social security and health insurance and other	300,00	667,25	11129,62
<b>Depreciation</b>	0,00	100,00	-43,50
<b>Other operating costs</b>	100,00	2158,89	-75,56
Taxes and fees	100,00	2053,47	-85,18
Various operating costs	100,00	2492,53	-50,26
<b>Interest payable and similar costs</b>	0,00	0,00	100,00
<b>Other financial costs</b>	549,92	-61,79	1357,41
<b>Income tax</b>	100,00	1622,96	-43,91

*Table 7 - Horizontal analysis of costs (own creation, in %)*

As can be seen in Table 7, in 2022, there is a decrease in consumption costs primarily caused by a decrease in COGS, which decreased by more than 5.5 million CZK in 2022. The company implemented more efficient production methods, optimized supply chains, secured better contracts with suppliers, resulting in an overall decrease in COGS. However, there is a significant increase in the item of materials and energy consumption by more than 100%.

In 2022, the company consumed significantly more material than in the previous year, as the company acquired many larger orders in 2022, such as an order for 100 distribution cabinets. Such a situation occurred for the first time in 2022.

As for personal costs, year-on-year values fluctuate, even though in 2021 the company employed more staff than in 2020, wages costs are decreasing. This was caused by the company having more employees on agreement to complete a job type of contracts during the year and fewer employees working on full-time basis. Wages and costs of social security and health insurance and other corresponded with the development of the personal costs item, with the exception occurring only in the costs of social security and health insurance item, where in 2021 personal costs decreased but costs of social security and health insurance and other increased.

In 2021, there is recorded an increase in other operating expenses, compared to 2020, by 2158.89%. While it may appear as a significant leap, it is important to note that in 2020, the company was still in its infancy. Thus, the values may seem like a substantial jump; however, when compared to the year-on-year turnovers, these values represent a negligible increase. The item of other financial costs also saw an increase of 1357.41%, primarily due to the company paying exchange rate losses.

### 9.3 Analysis of costs by behaviour

Unfortunately, the company does not classify costs according to their behaviour. Therefore, author was compelled, along with the company's economist, first to disaggregate the company's costs into fixed and variable. Classification analysis was used for the disaggregating costs, which was supplemented by insights from the company's economist and the CEO. Cost items not directly related to the production volume are not included in this breakdown. These include, for example, other financial expenses such as exchange losses, taxes and fees, and maintenance costs.

Cost item	2019	2020	2021	2022
<b>Variable costs</b>	<b>640 882</b>	<b>4 356 594</b>	<b>7 447 961</b>	<b>5 447 968</b>
Material consumption (variable part)	326 223	3 314 851	1 194 909	4 824 505
COGS	7 571	0	5 786 006	92 336
Service consumption (variable part)	307 088	1 041 743	445 063	314 610

Fuel consumption	0	0	21 983	216 517
<b>Fixed costs</b>	<b>185 021</b>	<b>980 824</b>	<b>2 368 493</b>	<b>3 509 588</b>
Material consumption (fixed part)	98 660	179 087	1 231 437	265 295
Depreciation	0	0	240 078	135 564
Service consumption (fixed part)	43 098	262 453	335 564	873 979
Energy consumption	0	8 700	15 600	56 099
Personal costs	5 700	170 430	120 269	1 237 478
Travel costs	37 563	352 138	387 352	469 296
Representation costs	0	8 016	35 965	88 232
Marketing costs	0	0	2 228	383 645

*Table 8 - Analysis of costs by behaviour (in CZK, own creation)*

As can be seen in Table 8, variable costs outweigh fixed costs in all of the observed years. The company primarily operates on made-to-order basis. In 2021, variable costs increased notably due to a significant rise of COGS, attributed to the company's expansion into other areas, particularly engineering and the installation of photovoltaic power plants.

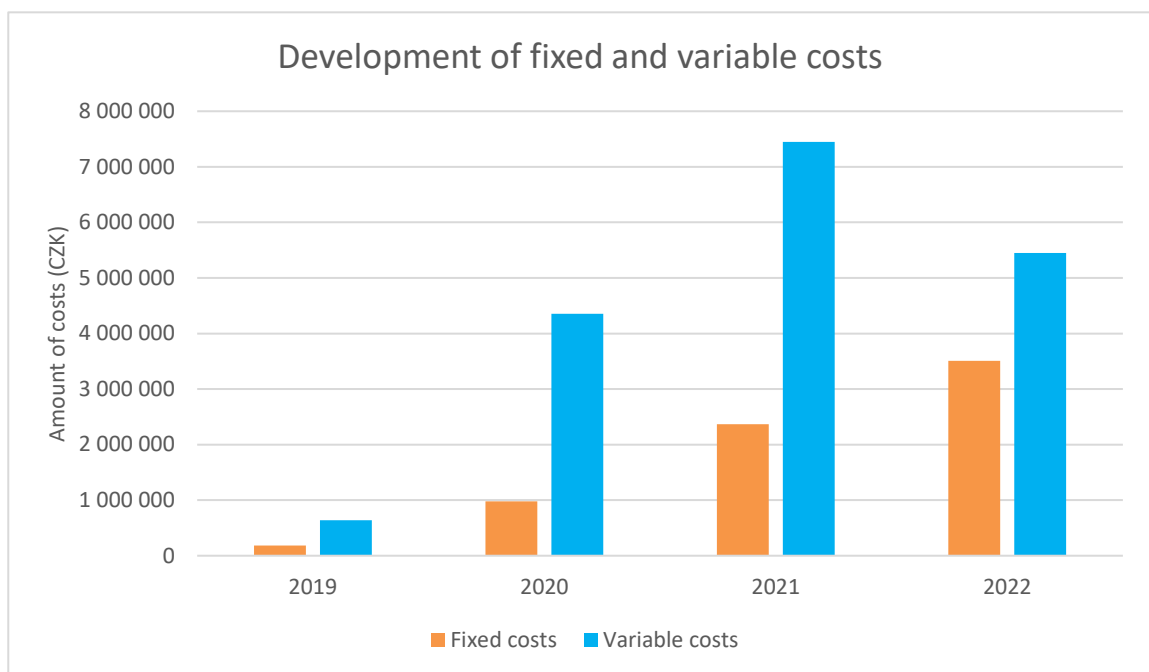
Given that the company specializes in custom manufacturing, the consumption of materials for variable costs depends on this aspect.

In 2020, when material consumption (variable part) significantly increased, the company focused primarily on electrical installation work, which also included the installation of smart homes. Due to the high demand for smart homes that year, the company consumed the most materials in this sector. This included components such as Loxone smart home devices, cables, distribution boards, switches, and sockets.

In 2021, there was an unusual occurrence where the consumption of materials for fixed costs exceeded that of variable costs. This phenomenon can be explained by the fact that the company was setting up office spaces and a smart home showroom that year, leading to an

increase in the consumption of materials for fixed costs. This occurrence is rare and has not happened in other years.

An interesting item to note is the service consumption (variable part), which exceeded 1 million CZK in 2020. This was because the company had few employees, only one full-time electrician, and had to subcontract installations and project realizations to other firms. Additionally, the company lacked sufficient machinery for project implementation, leading to the necessity of hiring external firms for various modifications, such as laser cutting.



*Graph 2 - Development of fixed and variable costs during observed period (in CZK, own creation)*

### 9.3.1 The structure of fixed costs

#### Material consumption (fixed part)

This item includes purchases of office supplies, office equipment, as well as the equipment for the Loxone smart home showroom. Additionally, it encompasses the procurement of work attire for administrative staff and electricians. Other items may include stamps, printed materials (brochures, business cards), GPS trackers for delivery vehicles, and even purchases of new tires.

**Depreciation**

During the observed period, the company recorded depreciation of company vehicles, large-format printers, office equipment, and also showroom equipment included, for example, kitchen and other furniture.

**Service consumption (fixed part)**

The fixed portion of these costs includes costs for rent, leasing of spaces, internet, software, licences and employee tariffs. Another component is vehicle insurance, costs associated with various trainings (such as those provided by the Czech Photovoltaic Association, which are crucial for the company). The company also includes vouchers, server fees, and web hosting charges under this item.

**Energy consumption**

A minor item within fixed costs is energy consumption, which includes fees for heating, lighting, electricity, and water. It may seem surprising that the company does not classify energy consumption as a variable cost, but this is due to the fact that most of the items produced in the warehouse (which also includes the production hall) are manufactured manually. The construction of distribution boards or the fabrication of structures does not require any machinery, so energy costs remain fixed.

**Personal costs (fixed part)**

A significant portion of fixed costs is represented by the fixed component of payroll costs. This primarily includes employee salaries, work performance agreements, and agreements for work activities. Here, the company includes both fixed salaries of administrative staff, such as a back-office assistant, and salaries of electrical designers and sales representatives. Also included are the wages of electricians and Loxone programmers, whose salaries are also fixed - they receive what is known as time-based wages.

**Travel costs**

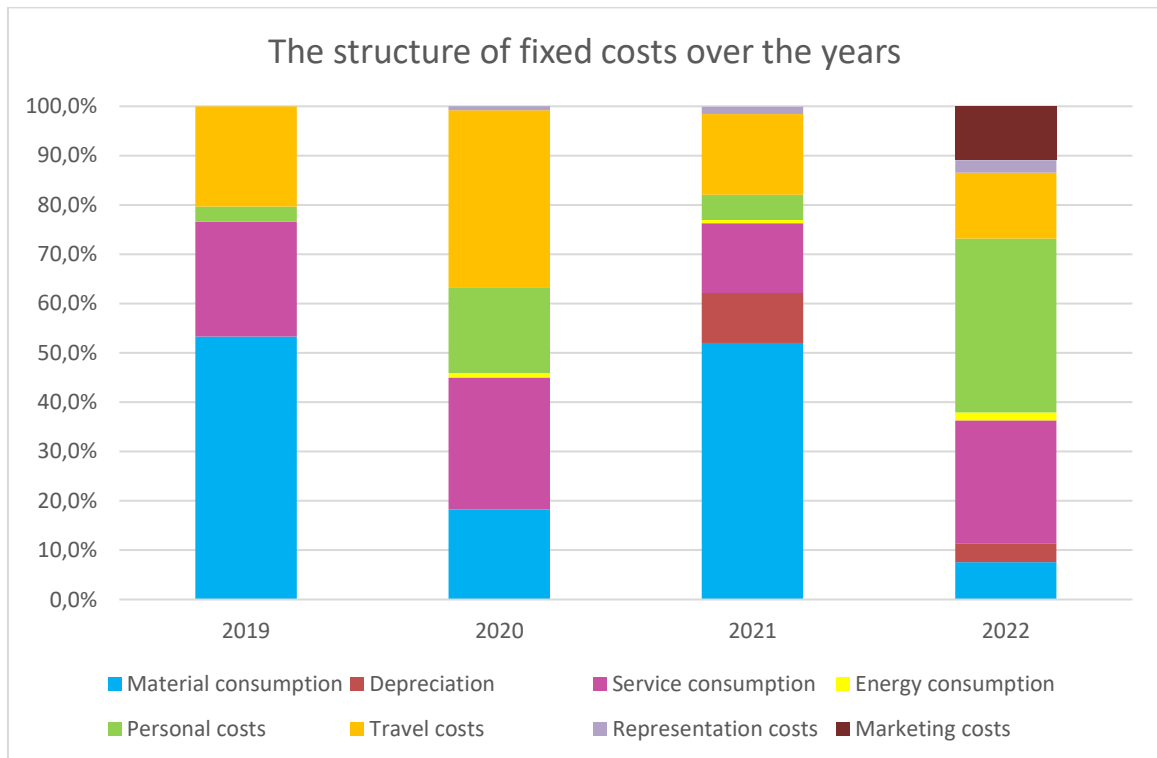
These are costs that the company reimburses to employees, such as sales representatives who travel across the Czech Republic daily. Travel expenses are also paid to electrical designers, for example, if they need to perform authorized supervision at a construction site (e.g., installation of a photovoltaic power plant). Accommodation expenses for employees are also included in travel expenses. These could include accommodation costs for electricians who, when carrying out a project on the other side of the country, may stay in a hotel for up to two weeks. Flight tickets are also included in travel costs.

**Representation costs**

Another minor item within fixed costs are representation costs. These include, for example, the costs of refreshments for guests at the showroom, in case of conferences held there. Additionally, the company includes what is known as a "coffee tariff," where coffee is procured monthly from another company and offered to potential clients who attend meetings. Catering expenses are also included in this category.

**Marketing costs**

Despite being almost negligible in the first three years, it is important to include this item in the breakdown because there was a significant increase in 2022. The company hired a marketing agency to manage PPC campaigns - this constituted a monthly cost that the company paid. Additionally, this category includes expenses for Google Ads, Sklik, and advertisements on Meta Platforms.



*Graph 3 - The structure of fixed costs over the years (in %, own creation)*

The vertical analysis was used to display the percentage representation of individual fixed costs. Based on the analysis, a graph was compiled.

As can be seen in the Graph 3, depicting the structure of fixed costs over the years, the highest proportion in years 2019 and 2021 is held by material consumption, over 50 % share of total fixed costs. However, in 2022, there was a change as the material consumption was nearly 8%. This was because during the first three years, the company had to establish its

infrastructure, which involved purchasing office furniture, computers, monitors, company phones, and additionally, from 2020 to 2021, the company was constructing a smart home showroom, so a lot of materials were consumed there. The showroom cost the company a significant amount of money, as complete renovations of an apartment were necessary, including purchasing a kitchen, furniture, new floors, outdoor shading, etc.

Another item where the proportion significantly increased are personal costs. In 2022, the company hired new engineers and a sales representative, and there was also an increase in salaries for existing employees. Additionally, the company started providing meal allowances. Moreover, each employee is entitled to personal bonuses, which also contributed to the increase in the proportion of personal costs.

In 2022, there is also an increase in the marketing expenses item to more than 10%. This happened because the company hired an agency to manage PPC campaigns and various other marketing activities, which incurred monthly payments.

The item of service consumption over the first three years accounts for 14-26% of the total fixed costs.

### **9.3.2 The structure of variable costs**

#### **Material consumption**

The largest portion of variable costs during the observed period was attributed to material consumption. The term encompasses the consumption of cabling, distribution boards, circuit breakers, photovoltaic panels, inverters, sockets, switches, light, and cameras. The majority of materials consumed by the company are components for Loxone smart home systems (custom electrical installations). Additionally, there are conductor cables, power cables, wires, circuit breakers, and other necessary electrical materials. Furthermore, material consumption also includes the use of electric underfloor heating in the form of heating foils. Other items included the consumption of overhead materials. Overhead materials include items such as packaging materials.

#### **Costs of goods sold**

The COGS include transportation cost, direct material cost, and any other direct cost.

#### **Service consumption (variable part)**

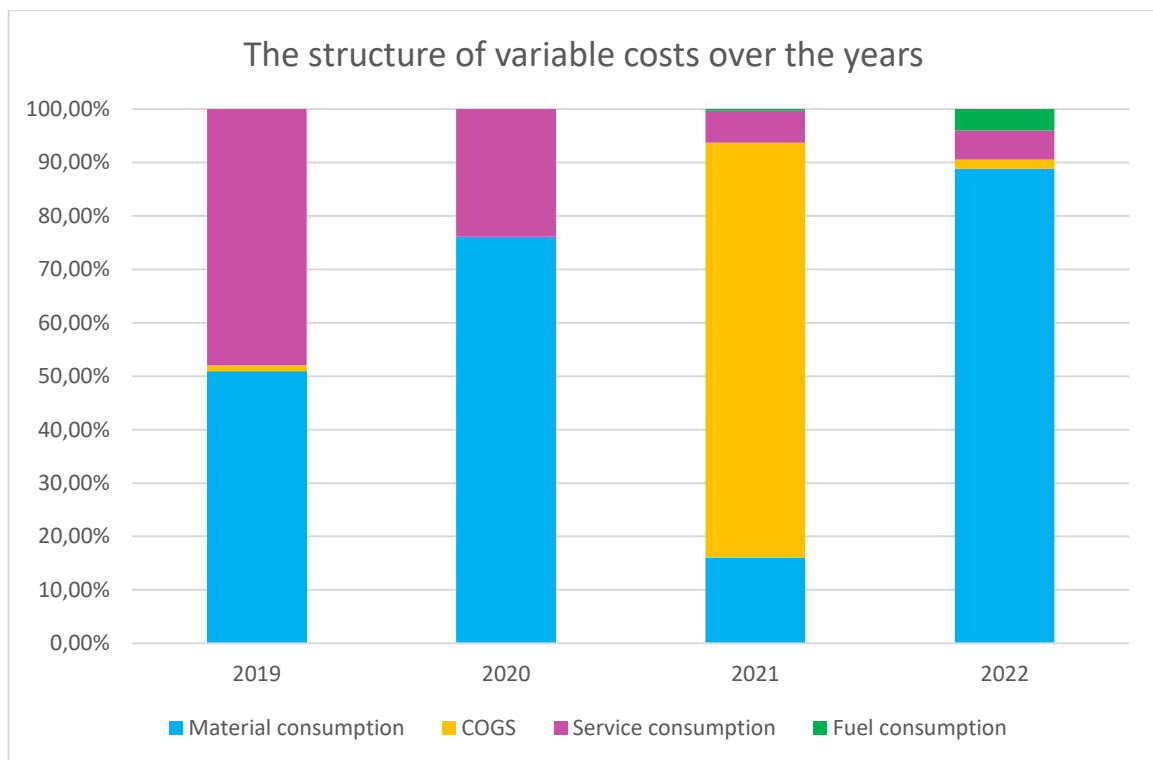
This item is largely composed of subcontracting costs incurred by the company when tasks necessary for the order cannot be performed internally. Among these tasks are modifications to intermediate product. The company also includes costs for electrical installation work



carried out by other firms, which were particularly necessary in the first two years. Sometimes, there is also a need for tinsmith work because the company installs photovoltaic power plants on roofs, which are not always in the best condition, requiring the company to pay tinsmiths to repair damaged roof tiles. Additionally, the company also includes crane rental among these costs - these are needed when it's necessary to get photovoltaic panels onto a roof that is too high or lacks any other access point.

### Fuel consumption

The last item of variable costs is fuel consumption. This varies mainly depending on the number of projects the company has and how often it is necessary to travel to construction sites. This item increases over the years because the company started taking on projects outside the Zlín region, thus increasing fuel expenses.



*Graph 4 - The structure of variable costs over the years (in %, own creation)*

Even in this case, vertical analysis was used to compile the graph of variable cost structure. From the Graph 4, in years 2019, 2020, and 2022 material consumption predominates among variable costs, which is common for manufacturing companies. In 2021, the proportion of material consumption relative to total variable costs decreases mainly due to the increase in COGS. As mentioned in the thesis before, the company expanded its business into the installation of photovoltaic power plants in 2021, hence the high COGS, the direct material cost and transportation cost for such specific products as inverters, batteries, and panels have

very high costs. Especially when it comes to imports, for instance, from Japan, where maritime transportation is required.

The service consumption costs in the first year approached a share of 50% of the total variable costs. Specifically, in this year, the expense was related to the fact that the company did not have enough internal staff to cover its orders independently, thus it had to pay external firms. In the subsequent years, there was a significant decrease in this share; in 2020, it was specifically 23.91%, in 2021 it dropped to just 5.98%, and further decreased to 5.44% in 2022. This variable cost demonstrates a decreasing trend over the years.

## 10 COST MODELLING

The chapter on cost modelling firstly focuses on constructing cost functions for each observed period using the classification analysis. Subsequently, a break-even analysis is conducted, supported by calculations of the business safety margin and margin of safety, as well as operating leverage.

### 10.1 Classification analysis

Based on communication with company management, it was found that the firm does not employ the creation of a cost function used to determine future total costs. To create a cost function, it is necessary to know the fixed costs in each year and a penny indicator, which is calculated by dividing variable costs by total sales. All the data required to compile the cost function are provided in Table 9.

It is important to mention that the change in inventory in 2022 amounted to 6,899,999 CZK. This item led to an increase in revenues through so-called estimated revenues, which are the revenues from products in stock (6 899 999 CZK) enriched by the company's profit margin of 20%. Therefore, the total amount added to the sales of products, services, and goods is 8 279 998 CZK - this is the price at which the company will invoice the products in subsequent periods. Therefore, the total revenues for the year 2022, including estimated revenues, amount to 11 138 216 CZK.

Year	2019	2020	2021	2022
<b>Q (sales, CZK)</b>	704 784	5 505 798	10 571 431	11 138 216
<b>FC (CZK)</b>	185 021	980 824	2 368 493	3 422 333
<b>VC (CZK)</b>	640 882	4 356 594	7 447 961	5 428 704
<b><i>h</i> (VC/Q)</b>	0,909	0,791	0,705	0,487

*Table 9 - Values needed to construct the cost function (in CZK, own creation)*

By substituting the parameters from the table into the basic formula for cost function the cost functions for individual years are generated, as shown in the table below. To obtain the monthly cost function, the formula can be adjusted as follows:

$$C = \frac{FC}{12} + h * Q$$

Year	Annual cost function	Monthly cost function
2019	$C = 185\,021 + 0,909 * Q$	$C = 15\,418 + 0,909 * Q$
2020	$C = 980\,824 + 0,791 * Q$	$C = 81\,735 + 0,791 * Q$
2021	$C = 2\,368\,493 + 0,705 * Q$	$C = 197\,347 + 0,705 * Q$
2022	$C = 3\,509\,588 + 0,489 * Q$	$C = 292\,466 + 0,489 * Q$

Table 10 - Resulting cost functions of classification analysis (own creation)

For validation, based on the estimated annual cost function for the year 2021, when revenues amounted to 10 571 431 CZK, the calculation of total costs was performed:

$$C_{2021} = 2\,368\,493 + 0,705 * Q$$

$$C_{2021} = 2\,368\,493 + 0,705 * 10\,571\,431$$

$$C_{2021} = 9\,821\,352 \text{ CZK}$$

The result almost matches the actual total cost amount, which corresponds to 9 816 454 CZK (fixed + variable costs). This is a small deviation that could have been caused by rounding.

## 10.2 Break-even point analysis

To calculate the BEP, the modified formula with the penny indicator could be used. In Table 11 below, the break-even point is calculated for each observed period, utilizing data on fixed costs and the penny indicator. Subsequently, the break-even point is compared with sales. The calculation of break-even point is conducted through classification analysis.

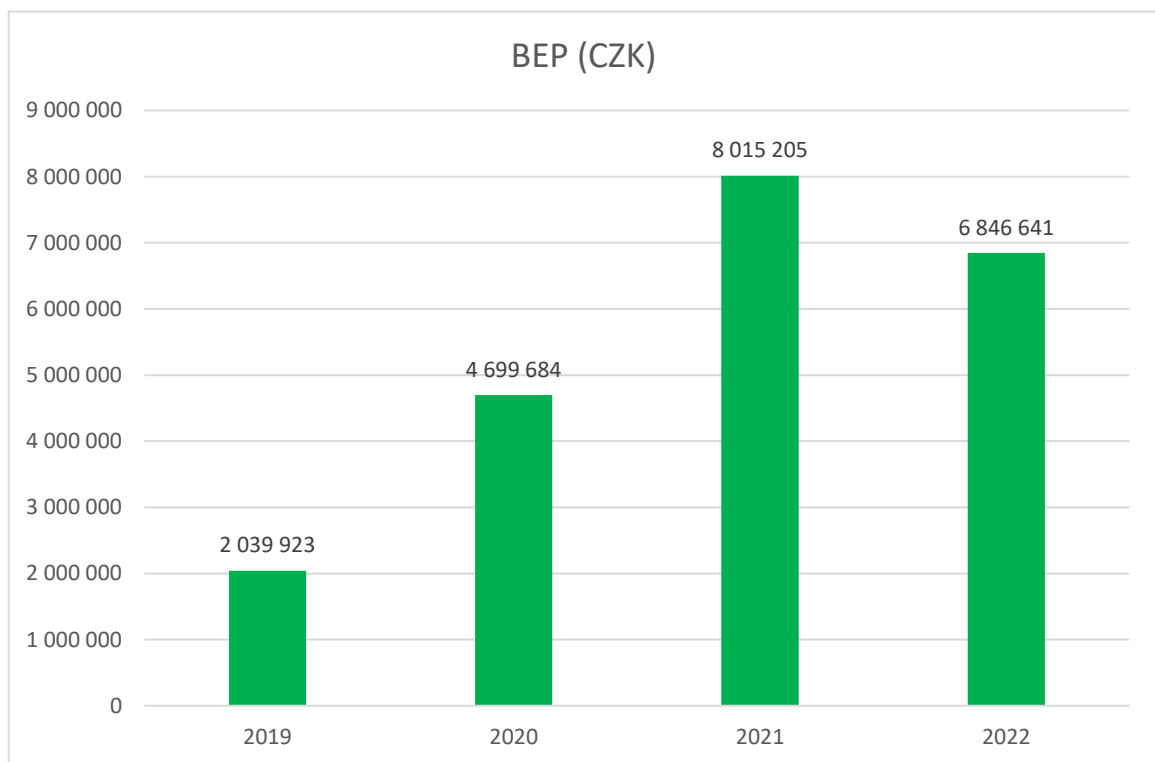
	2019	2020	2021	2022
<b>FC (CZK)</b>	185 021	980 824	2 368 493	3 422 333
<b><i>h</i></b>	0,9093	0,7913	0,7045	0,4874
<b>Qs (sales, CZK)</b>	704 784	5 505 798	10 571 431	11 138 216
<b>BEP (CZK)</b>	<b>2 039 923</b>	<b>4 699 684</b>	<b>8 015 205</b>	<b>6 846 641</b>

Table 11 - Calculation of break-even point (in CZK, own creation)

From the following break-even analysis results, it can be inferred that the company generated enough revenue in the years 2020, 2021, and 2022 to reach the break-even point and thus cover all incurred costs. The year 2019 was a loss-making year for the company; however, it was the company's founding year, which is why incurred costs exceeded revenue, thus the

company did not reach the break-even point. Revenues would have to be higher by 1 335 139 CZK for the company to reach the break-even point.

However, it is important to mention that the company had high variable costs in the years 2020, 2021, and 2022 which are costs that vary with production volume and can be optimized in some way. Fixed costs are mostly given and cannot be reduced. In the event that the company focuses on reducing variable costs in the subsequent years of 2023 and 2024 and optimizes its costs, the breakeven point could potentially be significantly lower. By decreasing variable costs, overall costs would decrease as well, enabling the company to generate profit at lower costs. Specifically, optimizing variable costs would entail negotiating better contracts with suppliers (lower prices), thereby reducing the value of materials consumed for orders. If the company negotiated better prices, it could afford to charge higher markups on orders, thereby increasing revenues and reducing variable costs accordingly.



*Graph 5 - Development of the BEP over the years (in CZK, own creation)*

### 10.3 Margin of safety and business safety margin

The business safety margin (BSM) serves for the purpose of comparing sales values with the calculated break-even point. Its results should indicate by how much can sales decrease before reaching the break-even point. For calculation purposes, this formula is used:

$$BSM = Q_s - BEP$$

For the subsequent percentage expression of the business safety margin, the margin of safety (MoS) is used, which can be calculated using this formula:

$$MoS = \frac{BSM}{Q_s} * 100$$

	2019	2020	2021	2022
<b>Qs (sales, CZK)</b>	704 784	5 505 798	10 571 431	11 138 216
<b>BEP (CZK)</b>	2 039 923	4 699 684	8 015 205	6 846 641
<b>BSM</b>	-1 335 139	806 114	2 556 226	4 291 575
<b>MoS</b>	-189,44%	14,64%	24,18%	38,53%

*Table 12 - Estimation of the business safety margin and margin of safety (own creation)*

The results presented in Table 12 shows negative values in the first year (2019), indicating that the company incurred losses and would need to increase revenues by 189.44% to reach the break-even point. Although the margin of safety value in 2020 is sufficient, it still falls short of being satisfactory. By 2021, the company is achieving more positive results, with the margin of safety approaching 25%, which can be considered a favourable outcome.

In 2022, there are even better results with a margin of safety of 38.53%. The company performed very well in 2022; however, it must continue to ensure that its business reserves remain at least at 20% in the future. Given that fixed costs increase every year, the company should avoid situations where it cannot cover its fixed costs.

Based on the analysed results, company should strive for cost reduction. If this is not feasible, the company would need to ensure higher sales. However, considering that the company is still in its early stages, it is important to note that it is performing well, but there is always room for improvement. Specific proposals and recommendations for improving the company's performance will be provided in the next chapter.

## 11 SUMMARY AND FINAL RECOMMENDATIONS

The first chapter of the practical part is dedicated to introducing the selected company. At the request of the company owner, the analysed company appears entirely anonymously throughout the bachelor's thesis. Therefore, only selected basic information is mentioned in the first part of the work. The chapter describes the company's focus (business scope), as well as its history and development up to the present day. Subsequently, the evolution of the number of employees is presented, showing an increase over the years. An analysis of asset and financial structures was conducted, along with the creation of a table depicting the development of economic indicators, revealing negative values in the company's financial performance only in the first year.

Furthermore, an analysis of the company's costs was performed. As previously mentioned, the company does not categorize costs into fixed and variable portions. Additionally, the company does not compile a cost function or conduct a break-even point analysis. These missing tools, which are used to examine or predict costs, were developed in collaboration with the company's accountant and CEO. Only by distinguishing between fixed and variable costs, the company could predict future cost trends. Analysed company should divide costs into fixed and variable to obtain a better understanding of its cost structure and its impact on the profitability of the business. The distinction between fixed and variable costs allows management to better plan, forecast and manage costs in response to changes in operations or production volumes. This breakdown allows a company to better understand which costs are necessary to maintain operations and which are associated with specific activities or production levels, which is key for planning and strategic decision-making. Therefore, the categorization of costs into fixed and variable can be considered a significant contribution of the bachelor's thesis to the company.

As for recommendations, as mentioned earlier, it is advisable to continue with the cost allocation in the coming years. Author would recommend the company to dedicate some time to distinguishing between costs in the coming years to gain a more detailed overview of, for example, unintended increases in fixed or variable costs. With such detailed cost allocation, the company could react to rising costs promptly and thus quickly prevent them.

Furthermore, author would propose internally dividing the costs into different categories for the company. By dividing total costs into smaller units, there would be better cost orientation. Although it may seem that the company is solely focused on electrical installations, it is a very broad term and needs to be divided into different categories. Given

that the company is involved in the installation and design of photovoltaic power plants, smart home electrical installations, as well as the design and installation of distribution boards, electric underfloor heating installation, and the sale and installation of electric vehicle charging stations, it would be beneficial to allocate costs according to these categories. These could specifically be named according to the mentioned categories. This way, the company would gain a detailed overview of the costs incurred in providing these services. Furthermore, through the division, the company would discover how much specifically is spent on the particular services provided, allowing for cost optimization. In the event that the company continues to invest in marketing development, author would also recommend tracking the category of the marketing; in such a case, the company could monitor both how much is spent on marketing and how much revenue it generates. This could be particularly beneficial for the company in the future, given that the company is constantly expanding and costs are increasing accordingly. The company utilizes the accounting system Money S3, which is capable of categorizing costs in this way, and various analysis templates are also available in the system, which the company could also utilize.

During communication with the external accountant and administrative staff, it was also discovered that the company records inventory in a very peculiar manner. The company does not have a dedicated warehouse manager to control how much and what type of material is consumed for specific orders. Instead, one of the main electricians is responsible for the warehouse in the company. He reports to the administrative staff every day after work about the materials consumed, but this system does not work very well. Since the administrative staff lacks sufficient knowledge to identify the specific materials consumed, they search for information on the internet, which makes it very likely that the results are incorrect. However, this issue also became apparent during inventory checks, where the inventory did not match the actual values. Therefore, author would recommend the company to adopt a better strategy - hiring a warehouse manager. This individual could oversee all these matters, preventing errors in the warehouse state and inventory. While this would increase the company's payroll expenses for the warehouse manager, even this small change could lead to better results. The company would then not have to purchase materials that are already in stock but are not properly recorded. Then the company would not end up with unused materials in stock at the end of the year.

Over the years, a significant amount of such unused materials has accumulated in the warehouse. The company could sell this unused material through an e-shop. The company already has one e-shop, but it only sells charging stations for electric vehicles. If the company



established its own e-shop to sell the materials it needs, it would not have to pay supplier margins. Additionally, a markup could be set on e-shop items, ultimately leading to cost reduction and revenue increase. There would, of course, be costs associated with purchasing the materials, but if the right strategy is chosen, it could obtain lower prices (due to increased sales volume through the e-shop) and set the e-shop margin to ensure competitive pricing. This would result in reduced material inventory and increased revenue. In 2020, the company had one e-shop, but it only sold Solid-State Relays (SSRs), and the e-shop was not adequately supported from a marketing perspective, resulting in low sales. Today, the company has built a reputation in the Zlín region and should not hesitate to start something new.

Based on the breakdown of costs by type and vertical analysis, it was found that in each observed year, the most significant portion of total costs is attributed to consumption costs. This phenomenon is not unusual for a manufacturing company and is primarily influenced by the price of purchased materials. Therefore, the company should streamline the processes of supplier relationship management. This change could lead to a noticeable reduction in material procurement costs. However, this would entail hiring a procurement officer, which the company currently lacks. The CEO of the company is a very self-sufficient individual who prefers to handle all these formalities herself. Nevertheless, due to this approach, the CEO is extremely time-constrained and strives to have complete control over everything happening in the company - which is not necessarily a bad thing. By delegating the area of material procurement to a designated person, the CEO could save valued time. Moreover, such an individual would have more time to communicate with external material suppliers and negotiate better prices for the company. Overall, there is huge potential in the company, which is untapped due to the lack of employees.

The company is significantly affected by a shortage of employees. In most large companies, when it comes to cost reduction, the first focus area is often reducing payroll costs - i.e., laying off employees. However, the analysed company faces the opposite problem; there is a shortage of employees. Some projects had to be handed over to competitors because the company lacked capacity, resulting in lost profits.

Another analysis conducted as part of the bachelor's thesis focused on cost classification by their behaviour. It was found that variable costs significantly outweighed fixed costs in the observed years. This structure is beneficial for the company because variable costs can be reduced more effectively and easily than fixed costs when needed.

As part of the analysis, a cost function was also compiled, utilizing classification analysis. Due to a lack of information from the company, additional methods for compiling the cost function were not used. Another recommendation to the company is to start constructing cost functions in the following years because it would enable them to estimate future total costs and monitor the relationship between costs and production volume.

Subsequently, the breakeven point was determined for all observed periods. In the first year, the breakeven point exceeded sales, indicating that the company incurred losses. In the following year, the company achieved sales sufficient to cover the breakeven point. The best result was observed in 2022, where sales exceeded the breakeven point the most, and the margin of safety, according to the classification analysis, was 38.53%. The results of the breakeven point along with the margin of safety demonstrate that in the loss-making years (2019), the company exhibited a very low level of performance, which was far from sufficient to cover the incurred costs. If the company started calculating the breakeven point, it would enable them to easily and quickly identify gaps between production volume and generated revenues.

It can therefore be said that the company did not manage or track costs in any way over the years. The only cost allocation the company applied was the allocation of costs by type, which is necessary for accounting purposes. However, cost management, tracking, optimization, and reduction are important parts of any company.

## 12 CONCLUSION

The main objective of this bachelor's thesis was to analyse the current cost structure in the selected company. Another important goal of this work was to evaluate the analysed costs and propose any recommendations for the company. The necessary documents and information were provided to the company, based on which the author was able to track the cost development, process the analysis, and provide the company with my own findings and recommendations. Therefore, it can be said that the goal of the thesis has been achieved.

In the first part of the thesis, the theoretical part, it was important to clarify the issues related to costs. Based on a literature review, six chapters were processed, in which the author was able to acquire the necessary information for the practical part. Within these six chapters, costs were first defined, followed by an explanation of the difference between managerial and financial accounting, where two basic concepts of costs were described within managerial accounting. Furthermore, costs were comprehensively classified, vertical and horizontal analysis were also explained, cost functions and methods of their determination were described and last but not least, cost management tools were explained.

This theoretical knowledge was then applied in the practical part of the thesis. This part provides a comprehensive view of the company's operations during the observed years, describing the consequences and impacts of the cost development, classifying costs, identifying connections, estimating cost function, estimating the required amount of sales, and examining the relationship between costs and sales. The company had not utilized any managerial accounting methods and tools, and costs were not managed in any way. Therefore, author hopes that the information derived from this work will be of great benefit to the company. Specifically, it is possible to continue with the proposed classification of costs into fixed and variable parts. As a result, the company can utilize related indicators such as cost functions, breakeven point, or margin of safety.

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**LIST OF ABBREVIATIONS**

CVP	First abbreviation – Cost-volume-profit analysis
BEP	Second abbreviation – Break-even point
<i>h</i>	Third abbreviation – Penny indicator
COGS	Fourth abbreviation – Costs of goods sold
CEO	Fifth abbreviation – Chief executive officer
FC	Sixth abbreviation – Fixed costs
VC	Seventh abbreviation – Variable costs
Q	Eight abbreviation – Sales
BSM	Ninth abbreviation – Business safety margin
MoS	Tenth abbreviation – Margin of safety

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## APPENDIX P I: PROFIT AND LOSS STATEMENT 2019

Minimální závazný výčet informací  
podle vyhlášky č. 500/2002 Sb.

### VÝKAZ ZISKU A ZTRÁTY v plném rozsahu

ke dni ..... 31.12.2019 .....

Obchodní firma nebo jiný název účetní jednotky:  
XYZ, s.r.o.

Sídlo nebo bydliště účetní jednotky  
a místo podnikání liší-li se od bydliště:

Rok	Měsíc	IČ
2019	12	XYZ

Označení a	T E X T b	Číslo řádku c	Skutečnost v účetním období	
			běžném 1	minulém 2
I.	Tržby za prodej výrobků a služeb	001	704 784,00	0,00
A.	Výkonová spotřeba	003	825 572,00	0,00
A.1.	Náklady vynaložené na prodané zboží	004	7 571,00	0,00
A.2.	Spotřeba materiálů a energie	005	424 882,00	0,00
A.3.	Služby	006	393 119,00	0,00
D.	Osobní náklady	009	5 700,00	0,00
D.1.	Mzdové náklady	010	5 600,00	0,00
D.2.	Náklady na sociální zabezpečení, zdravotní pojištění a ostatní náklady	011	100,00	0,00
D.2.2.	Ostatní náklady	013	100,00	0,00
*	Provozní výsledek hospodaření (+/-)	030	-126 488,00	0,00
VII.	Ostatní finanční výnosy	046	3 397,00	0,00
K.	Ostatní finanční náklady	047	11 426,00	0,00
*	Finanční výsledek hospodaření (+/-)	048	-8 029,00	0,00
**	Výsledek hospodaření před zdaněním (+/-)	049	-134 517,00	0,00
**	Výsledek hospodaření po zdanění (+/-)	053	-134 517,00	0,00
***	Výsledek hospodaření za účetní období (+/-)	055	-134 517,00	0,00
*	Čistý obrát za účetní období	056	708 181,00	0,00

## APPENDIX P II: PROFIT AND LOSS STATEMENT 2020

Minimální závazný výčet informací  
podle vyhlášky č. 500/2002 Sb.

### VÝKAZ ZISKU A ZTRÁTY v plném rozsahu

ke dni ..... 31.12.2020 .....

Obchodní firma nebo jiný název účetní jednotky:  
XYZ, s.r.o.

Sídlo nebo bydliště účetní jednotky  
a místo podnikání liší-li se od bydliště:

Rok	Měsíc	IČ
2020	12	XYZ

Označení a	T E X T b	Číslo řádku c	Skutečnost v účetním období	
			běžném 1	minulém 2
I.	Tržby za prodej výrobků a služeb	001	5 505 798,00	704 784,00
A.	Výkonová spotřeba	003	5 166 989,00	825 572,00
A.1.	Náklady vynaložené na prodané zboží	004	0,00	7 571,00
A.2.	Spotřeba materiálů a energie	005	3 493 939,00	424 882,00
A.3.	Služby	006	1 673 050,00	393 119,00
D.	Osobní náklady	009	170 430,00	5 700,00
D.1.	Mzdové náklady	010	170 030,00	5 600,00
D.2.	Náklady na sociální zabezpečení, zdravotní pojištění a ostatní náklady	011	400,00	100,00
D.2.2.	Ostatní náklady	013	400,00	100,00
F.	Ostatní provozní náklady	024	1 895,00	0,00
F.3.	Daně a poplatky	027	1 440,00	0,00
F.5.	Jiné provozní náklady	029	455,00	0,00
*	Provozní výsledek hospodaření (+/-)	030	166 484,00	-126 488,00
VII.	Ostatní finanční výnosy	046	65 565,00	3 397,00
K.	Ostatní finanční náklady	047	74 259,00	11 426,00
*	Finanční výsledek hospodaření (+/-)	048	-8 694,00	-8 029,00
**	Výsledek hospodaření před zdaněním (+/-)	049	157 790,00	-134 517,00
L.	Daň z příjmů	050	7 600,00	0,00
L.1.	Daň z příjmů splatná	051	7 600,00	0,00
**	Výsledek hospodaření po zdanění (+/-)	053	150 190,00	-134 517,00
***	Výsledek hospodaření za účetní období (+/-)	055	150 190,00	-134 517,00
*	Čistý obrat za účetní období	056	5 571 363,00	708 181,00

## APPENDIX P III: PROFIT AND LOSS STATEMENT 2021

Minimální závazný výčet informací  
podle vyhlášky č. 500/2002 Sb.

### VÝKAZ ZISKU A ZTRÁTY v plném rozsahu

ke dni ..... 31.12.2021 .....

Obchodní firma nebo jiný název účetní jednotky:  
XYZ, s.r.o.

Sídlo nebo bydliště účetní jednotky  
a místo podnikání liší-li se od bydliště:

Rok	Měsíc	IČ
2021	12	XYZ

Označení a	T E X T b	Číslo řádku c	Skutečnost v účetním období	
			běžném 1	minulém 2
I.	Tržby za prodej výrobků a služeb	001	4 717 831,00	5 505 798,00
II.	Tržby za prodej zboží	002	5 853 600,00	0,00
A.	Výkonová spotřeba	003	9 609 261,00	5 166 989,00
A.1.	Náklady vynaložené na prodané zboží	004	5 786 006,00	0,00
A.2.	Spotřeba materiálů a energie	005	2 448 328,00	3 493 939,00
A.3.	Služby	006	1 374 927,00	1 673 050,00
D.	Osobní náklady	009	120 269,00	170 430,00
D.1.	Mzdové náklady	010	117 200,00	170 030,00
D.2.	Náklady na sociální zabezpečení, zdravotní pojištění a ostatní náklady	011	3 069,00	400,00
D.2.1.	Náklady na sociální zabezpečení a zdravotní pojištění	012	2 569,00	0,00
D.2.2.	Ostatní náklady	013	500,00	400,00
E.	Úpravy hodnot v provozní oblasti	014	240 078,00	0,00
E.1.	Úpravy hodnot dlouhodobého nehmotného a hmotného majetku	015	240 078,00	0,00
E.1.1.	Úpravy hodnot dlouhodobého nehmotného a hmotného majetku - trvalé	016	240 078,00	0,00
III.	Ostatní provozní výnosy	020	18 928,00	0,00
III.3.	Jiné provozní výnosy	023	18 928,00	0,00
F.	Ostatní provozní náklady	024	42 806,00	1 895,00
F.3.	Daně a poplatky	027	31 010,00	1 440,00
F.5.	Jiné provozní náklady	029	11 796,00	455,00
*	Provozní výsledek hospodaření (+/-)	030	577 945,00	166 484,00
VII.	Ostatní finanční výnosy	046	14 460,00	65 565,00
K.	Ostatní finanční náklady	047	28 375,00	74 259,00
*	Finanční výsledek hospodaření (+/-)	048	-13 915,00	-8 694,00
**	Výsledek hospodaření před zdaněním (+/-)	049	564 030,00	157 790,00
L.	Daň z příjmů	050	131 100,00	7 600,00
L.1.	Daň z příjmů splatná	051	131 100,00	7 600,00
**	Výsledek hospodaření po zdanění (+/-)	053	432 930,00	150 190,00
***	Výsledek hospodaření za účetní období (+/-)	055	432 930,00	150 190,00
*	Čistý obrát za účetní období	056	10 604 819,00	5 571 363,00

## APPENDIX P IV: PROFIT AND LOSS STATEMENT 2022

Minimální závazný výčet informací  
podle vyhlášky č. 500/2002 Sb.

### VÝKAZ ZISKU A ZTRÁTY v plném rozsahu

ke dni ..... 31.12.2022 .....

Obchodní firma nebo jiný název účetní jednotky:  
XYZ, s.r.o.

Sídlo nebo bydliště účetní jednotky  
a místo podnikání liší-li se od bydliště:

Rok	Měsíc	IČ
2022	12	XYZ

Označení a	T E X T b	Číslo řádku c	Skutečnost v účetním období	
			běžném 1	minulém 2
I.	Tržby za prodej výrobků a služeb	001	2 467 786,00	4 717 831,00
II.	Tržby za prodej zboží	002	390 432,00	5 853 600,00
A.	Výkonová spotřeba	003	7 584 514,00	9 609 261,00
A.1.	Náklady vynaložené na prodané zboží	004	92 336,00	5 786 006,00
A.2.	Spotřeba materiálu a energie	005	5 362 416,00	2 448 328,00
A.3.	Služby	006	2 129 762,00	1 374 927,00
B.	Změna stavu zásob vlastní činnosti (+/-)	007	-6 899 999,00	0,00
D.	Osobní náklady	009	1 237 478,00	120 269,00
D.1.	Mzdové náklady	010	892 841,00	117 200,00
D.2.	Náklady na sociální zabezpečení, zdravotní pojištění a ostatní náklady	011	344 637,00	3 069,00
D.2.1.	Náklady na sociální zabezpečení a zdravotní pojištění	012	298 354,00	2 569,00
D.2.2.	Ostatní náklady	013	46 283,00	500,00
E.	Úpravy hodnot v provozní oblasti	014	135 654,00	240 078,00
E.1.	Úpravy hodnot dlouhodobého nehmotného a hmotného majetku	015	135 654,00	240 078,00
E.1.1.	Úpravy hodnot dlouhodobého nehmotného a hmotného majetku - trvalé	016	135 654,00	240 078,00
III.	Ostatní provozní výnosy	020	361 281,00	18 928,00
III.3.	Jiné provozní výnosy	023	361 281,00	18 928,00
F.	Ostatní provozní náklady	024	10 462,00	42 806,00
F.3.	Daně a poplatky	027	4 595,00	31 010,00
F.5.	Jiné provozní náklady	029	5 867,00	11 796,00
*	Provozní výsledek hospodaření (+/-)	030	1 151 390,00	577 945,00
VI.	Výnosové úroky a podobné výnosy	039	10 422,00	0,00
VI.2.	Ostatní výnosové úroky a podobné výnosy	041	10 422,00	0,00
J.	Nákladové úroky a podobné náklady	043	126 785,00	0,00
J.2.	Ostatní nákladové úroky a podobné náklady	045	126 785,00	0,00
VII.	Ostatní finanční výnosy	046	19 715,00	14 460,00
K.	Ostatní finanční náklady	047	413 540,00	28 375,00
*	Finanční výsledek hospodaření (+/-)	048	-510 188,00	-13 915,00
**	Výsledek hospodaření před zdaněním (+/-)	049	641 202,00	564 030,00
L.	Daň z příjmů	050	73 530,00	131 100,00
L.1.	Daň z příjmů splatná	051	73 530,00	131 100,00
**	Výsledek hospodaření po zdanění (+/-)	053	567 672,00	432 930,00
***	Výsledek hospodaření za účetní období (+/-)	055	567 672,00	432 930,00
*	Čistý obrat za účetní období	056	3 249 636,00	10 604 819,00