



# Company Foundation 4/5

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#### 4. Cost planning & cost accounting, calculation & pricing, financial planning and capital budgeting

After learning a lot about the market, competition, marketing & sales and sales forecasting in the previous study letter, you will now learn essentials about business accounting.

While the previous modules were crucial for documenting the marketability of your idea, it is now a matter of proving this with concrete figures and calculations. For this purpose, you will deal with the modules "Cost Planning & Cost Accounting", "Calculation & Pricing", "Financial Planning" and "Capital Requirements Calculation".

Learning Objectives Chapter 4:

- you can estimate and substantiate the costs of setting up and running the business,
- you are able to set a marketable price for your product,
- you know how to determine your capital requirements,
- you can draw up a financial plan for your company.

## 4.1 Cost planning and cost accounting

**Cost planning and cost accounting** should determine which costs and to what extent costs will be incurred in the realisation of the business concept. Cost planning and cost accounting are the commercial core of a business idea, where it is decided whether a product, a service or a project can be economically implemented in the market. Cost planning is used to decide how the company can and may operate. Cost planning for a start-up will have a different degree of coverage than for a business succession or an operational business concept where the amount of many costs is already known. The cost planning must be structured in depth according to the requirements of the respective business concept.

### 4.1.1 Cost plans

**Cost plans** record all costs and expenses of service production from different contexts. The costs of developing a business idea must be recorded in the same way as the pre-financing of the creation of the products themselves. Capital requirements must be determined. Profit and loss must be calculated on a monthly basis. An entrepreneur must constantly know the liquidity. Final accounts are required at the end of the year. Cost accounting forms the basis for the following detailed accounts:

- the implementation of the **calculation**,
- the calculation of the **investments**,
- the calculation of the **capital requirement**,
- the calculation of **profit and loss**,
- the calculation of **liquidity**,
- the preparation of the **balance sheet**,
- the preparation of **annual financial statements**.

The **calculation** includes the determination of the costs; it is also required for a cost estimate.

**Investing** means investing capital profitably. Investment is defined as a medium to long-term capital investment.

The **capital requirement** for investments, purchase of goods, start-up financing, participations, etc. is to be calculated. The capital requirement is covered by equity capital and borrowed capital. Every company needs capital.

The **profit and loss account (P&L)** determines the annual result of the business activity. The annual result is obtained when all expenses (costs) are deducted from the sales revenue.

The **liquidity calculation** determines whether the company can always meet all payment obligations.

The **balance sheet** is the comparison of the company's assets and liabilities for a business year.

**Annual accounts** must be prepared at the end of the year. The annual financial statement of a company can vary in scope. It usually includes the profit and loss account, the liquidity statement and the balance sheet.

## 4.1.2 Cost and performance accounting

**Cost and performance accounting** is part of business accounting, which provides information on the assets, earnings and liquidity situation of the company.

### Accounting

Accounts shall be kept of all operational data. The bookkeeping is a period accounting. It refers to the business year and records all income and expenditure.

Practitioners say: If you have your bookkeeping under control, you also have your business under control. Problems in the company and "sloppy" bookkeeping often go hand in hand. Proper bookkeeping provides information about the earnings situation and the financial situation of a company.

- All merchants and companies that operate a "commercial business" (Commercial Code HGB) are obliged to keep accounts. Non-merchants are also obliged to keep accounts if the company exceeds certain turnover figures. Corporations, such as the GmbH, are obliged to keep accounts and balance sheets. Double-entry bookkeeping is mandatory for them. Each transaction is recorded in an account and a contra account with a debit and credit side (account "salary" via account "bank").
- Non-traders" and "freelancers" are not obliged to keep accounts. They must prepare an income statement (simple bookkeeping). In all cases, the principles of proper accounting (GoB) apply. Everything must be documented. Receipts must be: complete, timely, correct, clearly arranged and properly recorded. No booking without an original receipt.

### Operating expenses

Knowledge of the classification of business expenses is of general importance for the preparation of a business plan. The following definitions should help to name the costs correctly.

In commercial language, expenses, expenditures and costs are distinguished.

- **Expenses** include all cash outflows, e.g. payment of salaries, rent, etc.; operating expenses that are not expenses are, for example, depreciation or invoices that have not yet been paid.
- **Expenses** include the total use of goods for the services. They are divided into earmarked expenses and non-operating expenses. Earmarked expenses concern direct operating expenses such as rents, salaries, material costs, etc.; neutral expenses are, for example, non-operating expenses for donations.
- **Costs** include the use of goods for the production of goods and services, measured in money. Basic costs are, for example, material costs, wage costs, advertising costs; additional costs that are not matched by expenses are, for example, entrepreneurial wages, interest on equity capital.

All expenses that the company has to incur in order to be able to operate the business are summed up under operating expenses.

### Imputed operating expenses

When planning operating expenses, a distinction must be made between imputed costs. Calculating them in a cost estimate, for example, are not recognised as operating expenses for tax purposes, however.

- **Imputed costs** are costs that are not matched by expenses. For tax purposes, for example, the repayment of loans, the personal private withdrawal (imputed entrepreneurial wage) or the rent for owner-occupied housing do not count as costs of the business.
- **Imputed entrepreneurial income** is defined for freelancers as private withdrawal for personal living expenses.
- **Imputed interest for equity capital:** It is intended to include a remuneration for the capital input by the entrepreneur or the shareholders in the cost accounting. Usual interest rates can be calculated.
- **Imputed rent, e.g.** when using an office in one's own home.

### Direct and indirect costs

The question of the allocation of costs to the provision of services must be answered. Can the costs be directly assigned to an individual service or are they general, indirect costs that arise for the entire company without being (directly) assignable to an individual service?

- **Direct costs** can be directly attributed to the individual service or unit of service, e.g. production material, wages, material costs, fees....
- **Indirect costs** are also defined as overhead costs. They can be distributed to the cost centres of the respective activity unit with the help of a distribution key (e.g. operational accounting sheet). The costs can only be indirectly allocated to an individual service, e.g. salaries, depreciation (AfA), room costs, insurances...

### Fixed costs , Variable costs

Fixed and variable costs differ in relation to the total costs of service provision. Costs are allocated according to the ratio of fixed to variable total costs.

- **Constant, fixed costs** arise regardless of the level of employment or utilisation, e.g. rent for business premises, interest, accounting staff, insurance....
- **Variable, variable costs** arise when the level of employment or utilisation increases or decreases; e.g. consumables related to the individual customer, customer frequency in a restaurant when eating and drinking...

## 4.1.3 Cost units, cost centres and cost types

### Cost unit

Cost units are the units of activity (individual product or service) of an enterprise, such as an order, certain products, product groups, a project, a building application, an operation, a good.

Cost Object Controlling builds on Cost Element and Cost Centre Accounting and is used to determine the total costs for each cost object in an accounting period (Cost Object Time Accounting) or to determine the unit costs for each cost object (Cost Object Unit Accounting).

Cost unit accounting determines the cost price and the sales price of a product or an order (cost unit).

The purpose of cost unit accounting is to show what the costs are for.

### Cost centre accounting

A distinction can be made between cost centres if the costs are to be allocated to individual service units such as jobs, departments, projects, processes or locations. The type of cost centre classification is to be defined by each company itself.

- Z. E.g. material costs for the production of a service at workstation A, B, C. - Cost centre is the workstation
- Z. E.g. manufacturing costs incurred at location A. - Cost centre is the location
- Z. E.g. distribution costs incurred in the dispatch department. The cost centre is the shipping department.

### Cost-type accounting

**Cost-type accounting** records and determines costs according to their content. For clarity, certain costs can be grouped into operating costs in the business plan. The type of grouping is company-specific.

Costs are defined in terms of content below. Basic cost types are dealt with in detail elsewhere in the manual.

- **Material costs** : Raw materials, consumables, supplies, working materials and all material costs for the production of products and services;
- Raw materials are substances that enter the manufacturing process as main components in the product, e.g. wood in a joinery...;
- Operating materials are substances that do not enter into the product but are required in the execution of the manufacturing process, e.g. lubricants, fuel oil, paper);
- Auxiliary materials are substances that enter the product as by-products, e.g. glue, paint for furniture, paper for a concept);
- Purchased finished parts, are parts that are purchased from other manufacturers and installed in the company's own production, e.g. fittings for kitchens, EDP tools for EDP programmes);
- **Personnel costs or labour costs:** Wages and salaries (see personnel cost calculation module 3), fees, bonuses, allowances, royalties, statutory social security (see module 3), travel expenses, work clothing, insurance, company car, holiday pay, voluntary social benefits, direct insurance, staff training, continued payment of wages in the event of illness (e.g. 6 weeks by the employer, only then does the health insurance pay), severance pay, staff advertisements, etc...;

- **Social security** : Social **security** contributions are regulated by law. They are paid half by the employer and half by the employee. The amount changes several times a year in some cases. Contributions are levied up to the income threshold. This is the maximum amount of gross salary up to which contributions must be paid to the statutory social security system. Contributions are levied on the gross salary of the employee.
- Since the amount fluctuates annually, a personnel cost factor of 20 - 25 % on the employee's gross salary can be calculated in the business plan.
- **Space costs**: rent for offices, workshops, shops, restaurants, halls, etc., plus ancillary costs for energy, installations, cleaning, insurance, taxes, maintenance, vacancy periods, brokerage costs, etc. plus ancillary costs for energy, installations and alterations, cleaning, insurance, taxes, maintenance, vacancy periods, estate agent's fees, etc. The amount of ancillary costs may well be up to 50 % of the basic rent. Space costs in prime locations of cities are considerably more expensive than in peripheral or commercial areas. Rent indexes exist in various cities. When renting space costs, deposits of one to three months' rent are common. The deposit must be placed with the landlord in a special account. For a monthly rent of € 2,000 for a commercial space, a three-month deposit of € 6,000 may be required. This must be taken into account in the financing and capital requirements calculation.
- **Marketing and advertising costs**: (see Chapter 3) Administrative marketing costs, e.g. marketing manager's costs, sales planning costs; revenue-generating marketing costs, e.g. costs of advertising, marketing mix, logo design, sales promotion, public relations, sales force, brochures, etc. Turnover-realising marketing costs, e.g. costs of invoicing, packaging, delivery and order processing.
- **Insurance does** not insure the entrepreneurial risk, but only possible damage (property damage and personal injury) that may occur in a company or privately. (see Insurances)
- **Accident insurance**: All employees of a company are legally insured against accidents in the Berufsgenossenschaft (BG). The accident insurance contribution is determined by risk classes. Companies with a high risk pay more than others. Currently, the average contribution to the BG is 1.3 % of the gross wage in all sectors.
- **Taxes** are legally defined public charges on companies and individuals. (see taxes)
- **Leasing** : The cost of renting assets such as machinery, equipment, vehicles, etc. The leasing rates usually include capital financing by the lessor. Leasing is not an investment but a current operating expense. Thus, leasing does not consume equity or debt capital. Leasing can "preserve" liquidity.
- R&D: Costs for research & development, costs for scientists, institutes, products and services, expert opinions, projects, etc.
- **Capital costs** : interest, redemption, risk premiums, advice, etc.
- **External service costs**: transport costs, rents, energy costs, fees, etc.
- **Overhead costs** are overhead costs for overhead, administration, insurances, advertisements, fees, contributions, lawyer, auditor, hospitality, management, organisation, EDP, telephone, internet, communication, advance costs, etc.



#### 4.1.4 Entrepreneurial wages

The **entrepreneur's wage** is one of the imputed costs. In the case of a partnership, it is intended to include remuneration for the work of the entrepreneurs working in the enterprise and their dependants in the cost accounting. Its amount is based on the remuneration for comparable work. According to its origin, it belongs to the additional costs, which are characterised by the fact that they are not offset by direct operating expenses.

<b>Calculating the Average Business Owner Salarie</b>	Monthly	p.a.
Livelihood	450,00 €	5.400,00 €
Additional costs	125,00 €	1.500,00 €
Health Care	300,00 €	3.600,00 €
Live Insurance	125,00 €	1.500,00 €
Private Pension Insurance	400,00 €	4.800,00 €
Misc. Insurance	50,00 €	600,00 €
Savings Contracts	39,00 €	468,00 €
Vehicle Costs + Insurance	125,00 €	1.500,00 €
Miscellaneous	25,00 €	300,00 €
Reserve	50,00 €	600,00 €
Income Tax	295,00 €	3.540,00 €
<b>Salarie</b>	<b>1.984,00 €</b>	<b>23.808,00 €</b>

The amount of the imputed entrepreneurial wage should at least cover the cost of living. They are to be determined individually within the framework of the business plan. The entrepreneur's wage is also referred to as the "private withdrawal" in the case of partnerships or freelancers. Care must be taken to ensure that the entrepreneur's wage remains appropriate to the business. What is appropriate certainly depends on the size and earning power of the business. The entrepreneur must determine his entrepreneurial wage or private withdrawal himself.

#### 4.1.5 Depreciation cycle

**Depreciation** refers to the loss in value of company assets (fixed assets and current assets). Depreciation is abbreviated as AfA = Absetzung für Abnutzung. Depreciation is the imputed cost for the consumption or replacement of fixed assets such as machinery, equipment, IT, fixtures and fittings and other capitalisable goods.

The principle of depreciation is based on the fact that a company buys an investment item and can claim the purchase as operating expenses in subsequent years in a cost-effective manner within the framework of depreciation. The company must secure the capital for the purchase price through equity or debt capital.

While the acquisition and production costs must be paid in full immediately by the entrepreneur, the Afa can only be offset against a fraction of the costs in the P&L in subsequent years. The Afa thus stipulates that the costs for assets that are used in the business for more than one year must be allocated in **equal or declining-balance annual amounts over the "normal useful life"**.

With the Afa, the assets are included in the depreciation cycle of the company. The aim is to be able to purchase the impaired goods again after the value has been consumed.

**Stages of depreciation:**

- The impairment of fixed assets is recognised through annual depreciation.
- Depreciation distributes the acquisition costs of an asset over its useful life (years).
- Depreciation reduces profit as an expense.
- Depreciation co-finances new investments, which is why it is taken into account in the calculation.

On the one hand, depreciation is a business method for determining the consumption of value; on the other hand, it is an instrument of tax assessment by the tax office. The state can increase or decrease its revenue from corporate taxes via the amount of depreciation. As a result, federal governments have changed the conditions for depreciation several times.

**Linear depreciation**

Under the Income Tax Act, the following depreciation rules currently apply.

- Low-value assets (GWG) can be depreciated up to a sum of € 150 in the year of acquisition; from € 150.01 to € 410 in the year of acquisition or fully depreciated according to ordinary useful life.
- Assets are depreciated on a **straight-line basis over a certain** depreciation period as a constant percentage of the acquisition or production cost of the asset.
- Useful life: e.g. computers 3 years, cars 6 years, office furniture 13 years, workshops and machinery up to 25 years.
- A fixed asset that can be used for three years is depreciated at 33 1/3% percent. The asset shall be listed in the fixed asset schedule.

E.G.: Linear depreciation of a computer over 3 years, acquisition costs € 2,000

Year	Linear depreciation Years in %and €	Residual value on 31.12.of the year
Acquisition costs	3 years	2.000 €
Depreciation in the 1st year	33 1/3 % = 666,66 €	1.333,34 €
Depreciation in the 2nd year	33 1/3 % = 666,66 €	666,68 €
Depreciation in the 3rd year	33 1/3 % = 666,68 €	0 €

### Degrressive depreciation

In the case of declining balance depreciation, the depreciation rate is applied to the residual value of the asset. In this case, the depreciation rate may be 2 ½ times as high as with straight-line depreciation, but not higher than 25 % per year. The book value will never reach "zero" under this method. Therefore, it is possible to switch from declining balance to straight-line depreciation.

e.g. declining balance depreciation of office equipment, acquisition cost € 2,000, useful life 10 years

Year	Degrressive depreciation of the years in %.	Residual value on 31.12. of the year
Acquisition costs	Max. 25 % per year	2.000 €
Depreciation in the 1st year	25 % = 500 €	1.500 €
Depreciation in the 2nd year	25 % = 375 €	1.125 €
Depreciation in the 3rd year	25 % = 281,25 €	843,75 €
Depreciation from 4th year to 10, years	Change to linear depreciation $843,75 \text{ €} : 6 \text{ years} = 140,62 \text{ € per year}$	703,12 €
Depreciation from 4th year annually	140,62 €	0 € in 10 year

### Principles of the Afa

Depreciation, as an operating expense, reduces a company's profit and thus its tax burden. By extending the useful life of an asset, the state can increase tax. In other words, the company invests and pays today, but only enjoys the full tax deduction of its costs in subsequent years (up to 25 years).

Depreciation is sometimes treated differently from a business point of view (from the point of view of the company) and from a tax point of view (from the point of view of the tax authorities). For example, a machine that has already been depreciated and is carried as fixed assets with a memo value of € 1. It can still provide full performance in the operational process without causing imputed costs. However, this no longer has any effect for tax purposes.

### Depreciation in the business plan

1. It must be decided whether it is a depreciable asset.
2. Low-value assets are depreciated in the year of acquisition.
3. For all other assets, the useful life is to be determined from the tax office or tax advisor, if necessary. The total amount is to be determined by the useful life (on a

monthly or annual basis). The depreciation tables of the tax office apply. (see also on the internet)

4. The depreciation amount is to be taken into account in the profit and loss account as imputed operating expenses. The depreciation increases the operating expenses and thus reduces the taxable profit.
5. The depreciation amount is to be taken into account in the price calculation as imputed consumption of value.
6. The depreciation amount must be taken into account in the liquidity planning. Since depreciation is assessed as imputed operating expenses and is included in the P&L, it increases liquidity when it is determined. Liquidity is increased by the amount of depreciation.

Depreciation is used as a cost in the calculation of sales prices. The calculated depreciation amounts flow back into the company in the form of liquid funds via the sales revenues. Therefore, depreciation must be added to revenues in the liquidity calculation. With the depreciation, acquisitions are made possible from depreciation returns. Depreciation is therefore also an important means of financing.

#### 4.1.6 Insurances

Entrepreneurs must check which **risks** should be covered by **insurance**. **The** rule is that an entrepreneurial risk is not insurable. As a self-employed person and entrepreneur, the operational and personal risk must be insured. The risk is to be held responsible for damage caused by accident, negligence, gross negligence or even intent. As a rule, only accidental and negligent damage is insured. Insurance cover is excluded if gross negligence or even intent is proven.

**Business insurances** are about damages that can occur, for example, due to theft, burst water pipes or negligence. In extreme cases, they can lead to the closure of the company. As a result, there could be failures in production or in the range of services, which has financial consequences. Company insurance also includes social security for employees, which the company has to finance.

With **personal insurance**, the loss of the individual's ability to perform is to be insured. It is often the most important capital. Especially in the first few years of setting up a business, a company is particularly dependent on the ability of the founder or owner to work. A sudden illness can endanger a business. The "greatest possible" risk should be insured.

The actual risks should be covered. Care should be taken to ensure that the costs remain reasonable. What is appropriate and necessary is to be determined in the concrete individual case.

When taking out insurance, it is important to find the right insurance provider. A price-performance comparison is relatively time-consuming, but should be taken into account. Contracts should have a reasonable (short) term and an annual cancellation option or contract extension.

Before taking out an insurance policy, information should be obtained from the industry or independent institutions such as the German Insurance Protection Association (DVS). Insurance companies provide calculations and costs of their insurances as offers. Price comparisons are

absolutely necessary. Low insurance premiums and consistent loss prevention help save costs. Insurance companies grant premium discounts or refunds: e.g. for alarm, fire alarm, sprinkler or extinguishing systems; in case of non-claiming of insurance benefits.

### Overview: Business insurances

<p><b>Business liability insurance:</b> in the event of claims for damages by third parties, e.g. customers, suppliers, visitors and employees.</p>
<p><b>Business interruption insurance (BU insurance):</b> for running costs such as wages, salaries, rent and interest, etc., as long as no income can be generated</p>
<p><b>Pecuniary loss insurance for company directors:</b> for the personal liability of GmbH managing directors and AG board members in particular.</p>
<p><b>Burglary insurance:</b> for damage due to theft, destruction, damage, etc.</p>
<p><b>Electronics insurance:</b> e.g. for costs of reusing programmes and re-entering data as well as maintaining business operations after a virus attack.</p>
<p><b>Fire insurance:</b> by the owner for damage caused by fire, lightning strike, explosion or aircraft crash</p>
<p><b>Motor vehicle liability insurance:</b> for damage to persons, property and assets caused by the driver to third parties</p>
<p><b>Tap water insurance:</b> for damage caused by water leaking from water pipes or water or heating systems.</p>
<p><b>Machinery insurance:</b> for repairs to stationary and mobile machinery caused by human error, operator error, negligence, etc.</p>
<p><b>Product liability insurance:</b> for damages suffered by third parties due to defective products (especially for manufacturers, suppliers, licensees).</p>
<p><b>Storm insurance:</b> for storm damage to buildings and movable property</p>
<p><b>Environmental liability insurance:</b> for claims for damages if soil, water, air are polluted by the business.</p>
<p><b>Insurance for employees:</b> e.g. accident insurance, company pension insurance or new pension options</p>

**Fidelity insurance:**

for costs arising from embezzlement, misappropriation, theft, forgery, fraud and other property offences

In addition to business insurance, entrepreneurs should insure themselves against **personal risks**. They can threaten the existence as a whole. This includes the

- *Health insurance* including family members and a daily sickness allowance to help alleviate loss of income,
- *Accident insurance* in the event that the entrepreneur is absent for a short or even long period (disability) due to an accident,
- *Disability or occupational disability insurance* in the event that the entrepreneur can no longer work at all or only partially.
- *Life insurance* to provide financial security for the family in the event of premature death,
- *Old-age provision* in the event of retirement. Various forms of investment are possible here. Investment in savings contracts, investment funds, real estate ownership, life insurance, private pension insurance.

#### 4.1.7 Taxes

**Taxes are monetary payments** which the public community (Federal Government, Länder, municipalities) may levy by virtue of its financial sovereignty on legal or economic transactions or facts without direct consideration. Natural and legal persons are liable to pay taxes. For companies, the topic of taxes is a broad field that is constantly changing.

When it comes to **taxes in the business plan**, it is not important to be able to apply all tax laws. Even tax advisors find that difficult. In addition, the tax perspective is quite different from the business perspective that an entrepreneur must first take for a successful business. For this reason, this handbook is only intended to name the most important taxes so that they are known by name and type.

When **used in the business plan**, the calculation of taxes can be subordinated.

- This means, for example, that the turnover tax must be shown in the determination of revenues or sales, but it can be shown in the same amount in the operating expenses, which results in a "zero-sum game". In principle, turnover tax is a transitory item for which the company must pay on behalf of the state. In any case, it must be ensured that within the presentation in the business plan it is not possible to act once with and once without tax calculation; then the results would be erroneous in substance.
- Trade taxes, corporate income taxes or capital gains taxes are usually only due when the company makes a profit. In the business plan, many start-ups initially focus on making a profit in the first place. The business plan should therefore first deal with the planning of the business idea and the operative business. The tax treatment and evaluation with the help of the balance sheet, with provisions and loss carry-forwards or supplements can be done in a second step with the help of a tax advisor.

- When it comes to tax assessment, a tax advisor is usually unavoidable.

### Taxes and legal form

The topic of taxation is of crucial importance even before the company is founded. The legal form determines taxation. Which legal form is best cannot be answered in general terms, but only on an individual basis, since facts such as liability play a role in the legal form.

The legal form determines the way in which "income statement" (e.g. non-traders, liberal professions), "profit and loss statement" (e.g. GmbH) or the preparation of a balance sheet (e.g. GmbH, AG) is drawn up.

The legal form also determines whether the founder has to register a business (trade licence) or conclude a GmbH contract with a notary. In addition, the GmbH is entered in the commercial register at the Chamber of Industry and Commerce. Different tax laws and requirements for proper accounting apply to all legal forms.

In the case of personal enterprises, a distinction can be made between traders and sole traders, i.e. entrepreneurs and persons in the liberal professions.

- A trader is a person who establishes a business and to whom the trade regulations such as the Trade, Commerce and Industry Regulation Act (Gewerbeordnung), the Catering Act (Gaststättengesetz) or the Handicrafts Code (Handwerksordnung) apply. Registration takes place at the trade/regulatory office of the city/municipality in whose district the business is located. As a partnership or corporation, a balance sheet must be prepared. The business can be entered in the commercial register at the local court.
- The liberal professions can operate without a trade licence. They must submit a personal tax return to the tax office of the place of residence. An income surplus account must be prepared. All business expenses and business income must be recorded. Own consumption must be recorded as private withdrawal (entrepreneur's salary).

### The choice of legal form

The legal form determines tax issues. For example, about this,

- whether losses can be claimed,
- whether income tax can be saved,
- whether trade tax must be paid,
- whether running costs can be claimed as business expenses.

In principle, entrepreneurial losses can be claimed for tax purposes. Losses are offset against profits. As a rule, the remaining profit is taxable.

A distinction must be made between loss **carry-forward** and **loss carry-back**. Losses that often occur in the start-up phase can also be claimed retrospectively, e.g. in the case of a GbR or sole proprietorship. They can be offset against income from the previous year (loss carryback). If there are still losses, they can be carried forward to the next year.

There is an order of precedence for loss carry-forward. Losses from the current year may first be offset against income from the current year and only then against losses from previous years. Maximum taxable amounts apply.

Loss carry-back and also offsetting against current income are not possible in a GmbH. Losses can only be carried forward to the next year. For this reason, a GmbH is not always the best solution for a start-up that makes losses in the first year. If the founder has also paid himself a managing director's salary, he must pay wage tax on this, which would not have been incurred if a partnership had been founded.

#### **Tax identification**

All businesses must obtain a tax identity number from their relevant tax office (registered office of the business). Invoices without such a SIDNR are not permitted. In addition, all invoices must have a sequential invoice number. Non-compliance may result in fines and possibly penalties.



## 4.2 Calculation & Pricing

**In costing, the** costs are determined in order to determine a sales price. In a company, all costs must be included in the calculation (full cost accounting). The calculation serves in particular to determine the price, because the sales price of a product or service must cover all the company's costs.

The calculation is used in the business plan to **calculate the price**. To calculate means to approach the selling price step by step. That means:

- The **market price** is the price achieved by competitors in the market. This price must be researched in the market and among the competitors.
- The **cost price** (also called full cost price) is the price that includes the total costs of the enterprise. This is to be calculated.
- The **selling price** (also called the offer price) is the price at which the goods are to be offered on the market. This must be determined by weighing up the market price and the cost price.

### 4.2.1 Market price, cost price, selling price

**In pricing, the** market price, **the** cost price and the sales price play the decisive role. Calculating the price of an offer requires knowledge of the market price and the cost price. Only then can the decision be made for the sales price.

- The determination of the market price can be done through a targeted market investigation. The market prices are to be determined for the products and services offered. For this purpose, the sales prices of competitors should be closely examined. The better the market research, the more accurate the basis for your own calculation.
- The cost price must first be determined on a full cost basis. In full cost accounting, all operating expenses are included and allocated to the individual offer. The cost price must include both direct and indirect costs. The cost price does not guarantee that this price can also be achieved as a sales price in the market.
- The costs of an individual company are not the only decisive factor for the sales price. The customer decides on the sales price in competition with the other competitors. The customer decides what, where and at what price he buys something.
- In the long run, the relationship between supply and demand determines the market price. The individual company will align its sales prices with the market price. The sales price can deviate upwards, deviate downwards or be equal to the market price. The decoupling from the market price - the sales price is far above or below the market price - must be justified by special conditions in the market or by operational conditions.

When determining the sales price, the business plan must also take into account price fixing: e.g. official maximum or minimum prices, as in the case of agricultural products; e.g. horizontal

price fixing through cartel-like agreements by competing companies; e.g. vertical price fixing through "recommended retail prices".

Regulations for price labelling must also be observed: e.g. in the retail trade, in the hospitality industry, in offers, at petrol stations, in the banking industry.

If the sales price to be achieved is above the calculated cost price, the entrepreneur's profit increases. If the sales price to be achieved is below the calculated cost price, there is a reduction in profit. If the cost price is permanently undercut, the enterprise will make losses.

#### 4.2.2 Calculations

There are different methods and areas of application for calculating the costs and price of a service. Calculations in commercial enterprises, in craft or industrial enterprises, in service and consulting companies or those of a freelancer differ significantly from each other.

**Costing** can take the form of preliminary, intermediate or final costing. As a preliminary costing or quotation costing, it serves to prepare decisions or the acceptance or rejection of projects and orders. Intermediate costing is carried out during the creation of products in order to control the adherence to cost budgets at the same time. In a final costing, the actual costs incurred can be compared to the cost targets. The final costing is a component of controlling.

##### **Costing procedure**

Different procedures can be distinguished.

- Full cost accounting
- Overhead calculation, division method, equivalence method
- Industry-specific calculations

##### **Full cost accounting**

In full cost accounting, all costs of the enterprise are allocated to the individual products and services. Full costs include all costs incurred in the manufacture of a product or service (full manufacturing costs) or all costs incurred for the products sold in a period (full cost of goods sold).

The calculation of full costs in larger companies is only possible with the help of an allocation of overhead costs, since not all costs incurred in a company have a direct causal relationship with the products manufactured or sold. This results in a fuzziness in the determination of the costs of an individual service. This fuzziness should be included in the decision on the cost price.

If costs and activities can be recorded exactly for each production order, it can be recalculated on an ongoing basis. The choice of the lowest hierarchical level in cost unit accounting (usually the order) determines the possible level of detail of the calculation. Full cost accounting ensures that all costs are covered by the unit price of a quotation.

**Example: Full cost accounting**

A start-up wants to sell something. His monthly fixed costs amount to:

<b>Monthly fixed costs</b>		
Entrepreneurial wages	2.000,00 €	65%
+ Share of social security (approx. 25%)	500,00 €	16%
= Total personnel costs	<u>2.500,00 €</u>	<u>81%</u>
+ room costs	300,00 €	10%
+ Overhead costs (general costs)	<u>300,00 €</u>	<u>10%</u>
= Total fixed costs	3.100,00 €	100%
+ variable cost share per order	Amount x €	
= Total costs or full costs	Sum x €	

If the entrepreneur were to carry out only one order per month, he would have to calculate at least € 3,100 fixed costs for it, plus the variable costs for carrying out the order. If he could do two orders or a multiple thereof, the proportionate fixed costs of each order are reduced by the number of units.

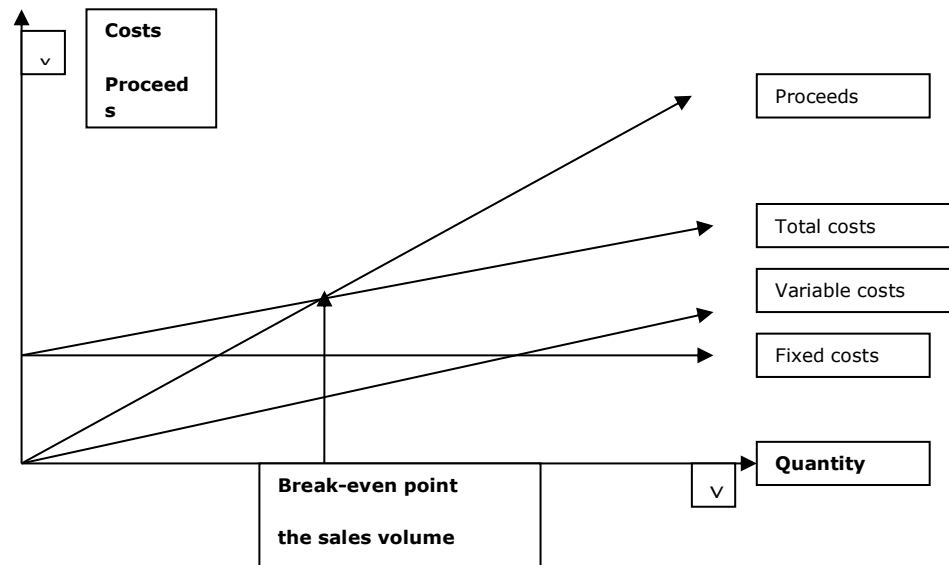
Cost shares per unit of output	Units	Fixed costs
1st order	1	3.100,00 €
2nd order	2	1.550,00 €
3rd order	10	310,00 €
4. order	50	62,00 €

The variable cost share per unit of output must be added to the fixed cost share. The profit mark-up must not be missing from this, provided it can be achieved on the market.

**Example calculation: Break-even**

Break-even is the profit threshold. If goods or services are sold, the break-even determines the intersection point from which profit can be made.

### Graphical representation



At sales volume X, profit is achieved at the break-even point.

### An example from the conference sector:

For conferences, seminars or events, it must be decided with how many customers an event can be carried out to cover costs. Break-even is the point at which the break-even point is reached.

A calculation makes assumptions:

- Turnover: The fee for the conference should be € 250 per day and client plus € 35 for catering and hospitality. This means a total of € 285 per client. While the sales price is fixed, the number of clients who accept the offer is variable.
- Expenses/costs: The fixed costs of holding the conference include: Speaker fees, conference rooms, advertising, administrative costs, costs of running the business including management; these should total € 5,100. These expenses are incurred regardless of the number of participants. The variable costs are dependent on the number of participants, such as catering (35 €) or working materials amounting to 50,- €, which are only claimed if the client actually participates.

the question is: With how many participants can a seminar calculated in this way break even? This is shown in the following break-even table. It shows how income and expenses change in relation to the number of participants. It is only with 22 participants that the income exceeds the expenses. However, the profit or loss threshold then rises progressively with each additional participant.

**Tabular calculation of the break-even point**

Participant	Remuneration variable Proceeds	Remuneration variable Proceeds	Fixed costs	Variable costs	Revenue	Expenditure	P&L	
	250 €/TN	35 €/TN	5.100 €	50 €/ TN	total	Total	€	
... 9	2250	315	5100	450	2565	5550	-2985	
10	2500	350	5100	500	2850	5600	-2750	
11	2750	385	5100	550	3135	5650	-2515	
12	3000	420	5100	600	3420	5700	-2280	
13	3250	455	5100	650	3705	5750	-2045	
14	3500	490	5100	700	3990	5800	-1810	
15	3750	525	5100	750	4275	5850	-1575	
16	4000	560	5100	800	4560	5900	-1340	
17	4250	595	5100	850	4845	5950	-1105	
18	4500	630	5100	900	5130	6000	-870	
19	4750	665	5100	950	5415	6050	-635	
20	5000	700	5100	1000	5700	6100	-400	
21	5250	735	5100	1050	5985	6150	-165	
<u>22</u>	<u>5500</u>	<u>770</u>	<u>5100</u>	<u>1100</u>	<u>6270</u>	<u>6200</u>	<u>70 €</u>	Break-even point
23	5750	805	5100	1150	6555	6250	305	
24	6000	840	5100	1200	6840	6300	540	
25	6250	875	5100	1250	7125	6350	775	
26	6500	910	5100	1300	7410	6400	1010	
27	6750	945	5100	1350	7695	6450	1245	

The **decision** as to whether and under what conditions the event should be held is an entrepreneurial one.

**Surcharge calculation**

In overhead costing, the unit costs or cost price of a unit of output are calculated. With the help of overhead rates, which can be determined for example in a cost accounting sheet (BAB), an overhead rate is added to the direct costs in order to determine the cost of goods sold by way of a summary or step-by-step procedure.

### Overhead calculation I

#### Scheme

+	<b>Direct material costs</b>	<b>MEK</b>
+	<b>Material overheads</b>	<b>MGK</b>
=	<b>Material costs or cost price</b>	<b>MK</b>
+	<b>Profit mark-up in %</b>	<b>G</b>
=	<b>Selling price</b>	<b>VP</b>

1. calculate material costs	Direct material costs <u>+ material overheads=</u> total material costs
2. calculate production costs or also creation costs	+ direct production costs+ production overheads <u>+ special production costs</u> + total production costs= <b>production costs</b> <b>(= material costs + manufacturing costs)</b>
3. calculate overheads	+ administrative overheads (overhead) + sales overheads (marketing) <u>+ other special direct costs+</u> total administrative + sales overheads = <b>Cost of goods sold</b> (= manufacturing costs + (administrative and/or sales overheads)) (V+V)
4. calculate profit and surcharges	<u>+ profit surcharge (17 %)</u> Cash selling price+ discount (x= 3%) <u>+ agent commission</u> = target sales price 100% <u>+ discount (z= 10%)</u> = list <u>sales price</u> (= net offer price) <u>+ sales tax (19%)</u> = <b>Gross sales price</b> (= Gross offer price)

(cf. cost accounting for start-ups)

## Overhead calculation II

An example in a company could look as follows: A gross sales price of € 34,652.11 is calculated from € 19,400.00 production costs.

Cost type	Subsidiary account	Amount in €
Direct material costs		10 500
+ <u>Material overheads</u>		500
<b>=Material costs</b>		<b>11 000</b>
+ Direct production costs		6 000
+ Production overheads		400
+ <u>special costs. Manufacturing</u>		2 000
+ <u>Manufacturing costs</u>		8 400
<b>= Production costs</b>		<b>19 400</b>
+ Administrative overheads		750
+ Sales overheads		1 300
+ <u>Special direct costs</u>		380
+ V u. V*		2 430
<b>= Cost price</b>		<b>21 830</b>
+ profit surcharge 17 %	100 % = 21830	3 711
	17 % = x	
<b>= cash selling price</b>	x = 3711	<b>25 541</b>
+ discount 2 %	100%-3%-2%=95%	1 344,26
+ commission 3 %	95% = 25 541	
	5% = x	
<b>= Target selling price</b>	x = 1 344,26	<b>26 885,26</b>
+ <u>discount 10 %</u>	100 %-10%=90%	2 987,25
	90% = 26 885,26	
<b>= List sales price</b>	10% = x	
<b>(net offer)</b>	x = 2987,25	<b>29 872,51</b>
+ <u>VAT (19%)</u>		5 675,77
<b>= gross sales price</b>		<b>35 548,28</b>

(cf. cost accounting for start-ups)

### Pre- and post-calculation

In any case, the sales price must first be calculated, that is a preliminary calculation. If it is reviewed after some time, a post-calculation is made. In principle, this applies to all services that a company produces and sells.

In production, pre- and post-calculation is of particular importance because direct material costs and overhead costs cannot yet be determined exactly, especially during the introductory phase. The deviations must be determined and taken into account for future orders.

The following table shows exemplary values that can illustrate deviations.

- For example, the post-calculation shows a cost of goods sold of € 23,230. The difference of € 1,400 to the preliminary costing of € 21,830 represents a cost under-recovery.

Amounts in	Pre-calculation	Post-calculation	Cost recovery
Direct material costs <u>+ Material overheads</u>	10 500500	10 500700	-
= Material costs	11 0006	11	
+ direct production costs	0004002	2006 0004503	
+ production overheads	0008	0009	-
+ special cost overheads	400	450	
<u>+ manufacturing costs</u>			
Production costs	19	20 6508001	+ /-
+ administrative overheads	4007501	4001002	
+ sales overheads + <u>special costs</u>	3003802	580	
+ <u>(Sales + administrative costs)</u>	430		
Proportionate calculated cost price	21 830	23 230	- 1 400

(cf. cost accounting for start-ups)

In simple overhead costing, the total overhead costs of a business are added to the total direct costs for materials and wages and then divided by the sum of the output quantity produced.

In differentiated overhead costing, costs are determined step by step for the areas of materials, production, sales, administration, personnel, etc.



**Example: Percentages of an overhead calculation**

Cost unit accounting			
Production quantity in pieces	10,000 piece	Cost price per piece	Percentage of cost price
Production material	100.000 €	10 €	18,5%
+ Production wages	200.000 €	20 €	37%
= Total direct costs	300.000 €	30 €	55,5%
+ Overheads	240.000 €	24 €	44%
= Cost price	540.000 €	54 €	100 %

Table 1: Percentages of an overhead calculation

**Division procedure**

The division method is suitable for calculating unit or direct costs. The method is generally applicable. To determine the cost of a unit, the total cost is divided by the quantity produced.

**Example: Simple division calculation**

Total cost of production 55.800 € ----- Quantity produced: 124,000 units	= Production costs for 1 unit = € 0.45
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**Equivalence procedure**

Equivalence costing is used when a company produces "several similar" products, e.g. bricks, drinks, dairy products, which go through the same production process but differ in shape, size, colour, etc. in the final stage. These differences are tried to be determined with the help of valuation or ratio figures. The unit costs of the different, similar products are determined with the aim of identifying the relationship between them. With the help of the equivalence number, the calculation can be considerably simplified.

**Example: Scheme of an equivalence calculation**

Variety	Power quantity	Ratio = equivalent	Power unit	Total costs Euro	Cost of the unit of output
A	1250	0,8	1000	1500	$0,8 * 1,5 = 1,2$
B	2000	1,0	2000	3000	$1,0 * 1,5 = 1,5$
C	4000	1,5	6000	9000	$1,5 * 1,5 = 2,25$
			9000	13500	
			<b>1</b> →	<b>1,5</b>	

The ratio is calculated by dividing the unit of output by the amount of output:  $1000:1250 = 0.8$ , etc. The unit of output relates to the total cost as 1:1.5 ( $13,500: 9000= 1.5$ ). Thus, the ratio of the output quantity to the output unit is  $0.8 * 1.5 = 1.20$  Euros.

In all cases, the business needs information regarding material costs, production costs, manufacturing costs, personnel costs and total cost of goods sold to make decisions.

### 4.2.3 Industry-specific calculations

**Calculation in the trading company**

A trading company is characterised by the fact that it sells goods in different quantities and sales forms, such as retail, wholesale, mail order. The goods to be sold have to be obtained, possibly stored, offered in a salesroom or catalogue and finally sold in a sales talk. The goods are usually not changed by the trader.

In trade, therefore, the goods must first be purchased by the entrepreneur himself before they can be resold. A distinction is made between a purchase calculation and a sales calculation.

- The *purchase price calculation* determines the purchase price of the goods. The starting point is the invoice price (net) or the list price. After deducting discounts and rebates, the purchase price remains. Delivery costs may also have to be added.
- The *sales calculation* takes the purchase price as a starting point and adds the business costs incurred in the business as prime costs. In addition, a provisional profit share is added until the final sales price (net) is found. The sales price (net) plus turnover tax results in the sales price (gross).

**Scheme: Overhead calculation trade**

	Gross purchase price
-	Invoice deductions (reseller discount, cash discount)
+	Procurement costs
=	Purchase price, cost price or net purchase price
+	Business expenses
+	Profit
+	Sales surcharge
=	Effective or gross sales price

Reference price calculation	
Invoice price	240,00 €
- Discount	7,20 €
= Target purchase price	232,80 €
- Cash discount	4,66 €
= Cash purchase price	228,14 €
+ Procurement costs	21,86 €
<i>Subscription price</i>	250,00 €

Sales price calculation	
<i>Subscription price</i>	250,00 €
+ Action costs 25 %	62,50 €
= Cost price	312,50 €
+ Profit 12 %	37,50 €
= Cash selling price	350,00 €
+ Discount 2 % (in hundred)	7,14 €
= Target selling price	357,14 €
+ Discount 5 % i. H.	18,80 €
= Final sales price (net)	375,94 €
+ Value added tax 19 % (resp. 7 %)	71,42 €
= Selling price (gross)	447,36 €

In the sales talk, the trader often has to grant a discount or cash discount for cash payment; these are added as sales surcharges in the calculation beforehand.

- The gross profit, expressed as a percentage of the reference price, is called the calculation mark-up.
- The gross profit, expressed as a percentage of the selling price, is called the trading margin.
- The net profit (in the sense of income tax) is calculated as a percentage of the cost price and added to it. Example: Turnover at cost = 122,000 €; net profit: 15,000 €; net profit as a percentage of turnover =  $15 \text{ T€} : 122 \text{ T€} * 100 = 12.2 \%$ .
- The net profit includes the entrepreneur's salary as remuneration for his activity, the interest on the equity invested in the business and the actual entrepreneurial profit, which also serves to cover the general, incalculable entrepreneurial risk.
- The calculation can be determined in a simplified way with the help of a calculation factor, which can be formed when some experience is available.

#### Calculation in the manufacturing plant

A manufacturing company is characterised by the fact that it produces goods and products itself or processes them further. The costing in a company that produces goods must first buy them as preliminary products, then process them and finally sell them. This also applies to many craft enterprises.

#### Example: Quotation calculation in the manufacturing industry in euros

The offer at which a certain product is to be sold to a customer is to be determined:

Designation	Values	
Product designation		Screws
Quantity required		10.000
Machine designation		CNC machine
Machine hour charge rate		50,00 €
Max. Production quantity per hour (in pieces)		1000
Proportionate machine costs per unit		0,05 €
+ material costs per piece		0,10 €
+ External power per piece		0,10 €
= Cost price per piece		0,25 €
+ Profit per unit	50%	0,125€
= Selling price net piece		0,375 €
* Supply quantity to be produced		10.000

Net bid amount	%	3.750 €
* VAT in %	19%	712,50 €
<b>Gross bid amount</b>		<b>4.462,50 €</b>

A trader needs 10,000 screws. They can be produced with a CNC machine. The production hour of the machine should cost 50 €. The machine can produce 1,000 screws per hour. The proportional machine cost per screw is  $50 \text{ €} : 1000 = 0,05 \text{ €}$ . The material costs amount to 0.10 €. External services, such as galvanising, amount to another 0.10 €. The cost price is therefore 0.25 € per piece. The company wants to realise a profit of 50 %. The sales price is therefore 0.375 € per piece. With 10,000 pieces, this results in a gross offer amount of 4,350 €.

### Calculation of services

The calculation of a service is determined by the type of service provision and the know-how required for this. The selling price is based on the individual hourly rates of the person offering the service.

### Example: Quotation calculation for services in euros

The service offer can be calculated on an hourly basis. A total service is assumed for which a definable number of hours can be charged. External services (from third parties), for example, are required to create the service and must be included accordingly.

Costing levels		Amount
Wage costs per chargeable working hour		20,47 €
+ variable overheads		4,47 €
+ fixed overheads per chargeable working hour		12,85 €
= Hourly rate (cost-covering)	100 %	37,79 €
+ Profit share per working hour	15 %	5,66 €
= Hourly billing rate		43,45 €
* Number of working hours required	10	
= Offer sum for own services		434,50€
+ External services	100,00€	100,00€
+ external service surcharge	10%	10,00€
= Offer sum (net)	100%	544,50€
+ VAT in %	19 %	103,45€

= bid amount (gross)	116%	647,95€
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### Fixed price calculation for services in euros

The fixed price calculation is based on the fact that a fixed hourly rate is determined as a starting point. The order volume is to be estimated in work units or time units.

Costing levels		Amount
Labour costs per hour worked	50%	25,00 €
+ variable overheads	20%	5,00 €
+ fixed overheads per chargeable working hour	30%	7,50 €
= Hourly rate (cost-covering)	100%	37,50 €
+ Profit share per working hour	10%	3,75 €
= Hourly billing rate according to operating data		41,25 €
Shortage or surplus per working hour		8,75 €
= Hourly rate offered		50,00 €
* Number of working hours required	15	
= Offer sum for own services		750,00 €
+ External services		1.400,00 €
+ Third-party surcharge in %	0%	- €
= Offer sum (net)	100%	750,00 €
+ VAT in %	19%	142,50 €
= total amount offered (gross) specified	116%	892,50 €

### Calculation of freelance activities

Cost calculation in the liberal professions is based on the type of business. Only when the type of service is defined and the type of income, a calculation scheme for the calculation of the respective services is possible. The activity of a freelance commercial agent is completely different from that of a freelance lawyer, doctor or psychological practitioner. Neither in the case of a commercial agent are the revenues defined by sales figures and corresponding commissions, whereas the revenues of lawyers or doctors are defined by fee schedules - partly on a statutory basis. If, for example, flat rates per case are paid for medical services, a price calculation of an individual service is hardly possible. Instead, the doctor must try to adjust the service to the price. This also happens when services are budgeted. In any case, a calculation must refer to the overall performance of the enterprise and the total costs.

If a freelance management consultant sells his consulting services on his own, he has to take into account not only material and office costs, but above all the "time spent". It makes a big difference whether a consultancy hour costs € 25, € 50 or even € 200.

#### *Model calculation of a consultant, trainer, lecturer*

Consultants, trainers, course instructors, lecturers are usually paid on an hourly basis. In the case of a consultancy assignment or a seminar, only a certain fee can be achieved:

Consultation hour	Total fixed hours	possible income
15,00 €	20	300,00 €
25,00 €	20	500,00 €
50,00 €	20	1.000,00 €
100,00 €	20	2.000,00 €
200,00 €	20	4.000,00 €

**Possible income:** The income range for the same working hours is therefore very different.

**Necessary working time:** From the point of view of the self-employed entrepreneur, the question is how great the effort must be in order to achieve a certain income. The basis for this is at least the entrepreneur's wage - after deduction of all costs.

Income margin		Achievable hourly fee	Necessary working hours per month	
A	B		A	B
1.500,00 €	4.000,00 €	15,00 €	100	267
1.500,00 €	4.000,00 €	25,00 €	60	160
1.500,00 €	4.000,00 €	50,00 €	30	80
1.500,00 €	4.000,00 €	100,00 €	15	40
1.500,00 €	4.000,00 €	200,00 €	7,5	20

To achieve an income of 1,500 €, 100 working hours must be spent at an hourly fee of 15 €. With a fee of 200 €/hour, on the other hand, only 7.5 hours.

The valuation of the hourly fee must be based on the market price at which the freelancer can sell his service. The hourly fee must cover the costs in total.

As a freelancer, the fee (gross) is taxable in full within the scope of income tax after deduction of business and deductible costs. Pension expenses and the costs of running a business should also be paid from the gross; the net income is therefore correspondingly lower.

The calculation for freelancers depends on the type of business. Another possibility is the sale of advisory services at a fixed cost rate. The determination of service packages or of contracts for work, where not the individual hour or day is sold, but a service product at a calculated price, is another way of calculating sales prices.

#### 4.2.4 Contribution margin accounting

In order to place an offer in the market, it may be necessary not to determine the price on a full cost basis, but to calculate the contribution margin. This means giving up part of the fixed costs or part of the administrative costs or profit.

Contribution margin accounting provides answers to the following questions:

- Which products are uneconomical and should not be offered any longer?
- From which number of units does the company reach the break-even point (break-even analysis)?
- Where is the absolute lower price limit of a product?
- What is more cost-effective: to manufacture a product yourself or to buy it?

#### Calculation scheme

$$\frac{\text{Sales revenue} - \text{total variable costs}}{\text{total contribution margin}}$$

$$\frac{\text{Sales price per unit} - \text{variable costs per unit}}{\text{contribution margin per unit}}$$



For one product, the list sales price in the sales calculation is € 436.70, with a profit of € 83.21 included. In order to check whether the costs are covered by this price, the variable costs must be determined. These amounted to € 410 in the calculation:

Selling price per piece	436,70 €
<u>./.variable costs per piece</u>	<u>410,00 €</u>
= Contribution margin per unit	26,70 €

The production of the product makes sense because the positive contribution margin of each unit reduces the burden of fixed costs. The operating result is improved by each additional unit sold - in our example by € 26.70.

In contribution margin accounting, only the variable costs are charged to a product. If the achievable sales price exceeds the variable costs, a contribution margin is generated.

By back-calculating, it is possible to see which product revenues cover the fixed costs and which products generate profits. It is also possible to see which product groups should be discontinued or reduced in production because they generate too low or negative contribution margins. In practice, direct costing systems are designed as contribution margin accounting.

#### Example of a contribution margin calculation in euros

The contribution margin calculation indicates how high the contribution margin is to cover the fixed costs and to cover the profit.

Designation	Std. rate	Order 1	Order 2	Order 3
Order total = sales price		30.000 €	10.000 €	64.000 €
Fixed: Number of working hours		100	100	100
Fixed: Material costs		23.000 €	9.000 €	43.000 €
Variable: Wage cost share	25 €	2.500 €	2.500 €	2.500 €
Contribution margin		4.500 €	-1.500 €	18.500 €
Contribution margin per working hour		45 €	-15 €	185 €
- Fixed costs per working hour	20 €	20 €	20 €	20 €
Variable: profit per working hour		25 €	-35 €	165 €
Profit / loss total order		2.500 €	-3.500 €	16.500 €

- **Order 1** has a contract sum of 30,000 € with 100 working hours. After deducting the material costs, a sum of 7,500 € remains. This sum includes a profit mark-up of 2,500 € as well as a labour cost share of 4,500 €. Knowing the internal cost structure, the

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fixed costs of working time amount to 2,000 € and the variable wage costs to 2,500 €. The possible contribution margin is € 4,500, i.e. the variable cost shares.

- **Order 2** has a contract sum of 10,000 € with 100 hours. This includes 9,000 € in material costs. The variable wage cost share is  $100 \cdot 25 \text{ €} = 2,500 \text{ €}$ . This results in a negative contribution margin of 1,500 €. With this loss, the contribution margin per hour is 15 €. The total loss is 3,500 €.
- **Order 3** has a total of € 64,000. With material costs of € 43,000 and a variable wage cost share of € 2,500, the contribution margin is € 18,500 and the profit is € 16,500.

#### 4.2.5 Criteria for the price decision

The calculation has to calculate the cost prices on the basis of operational reality. However, the decision of the sales price must also include aspects of the marketing strategy. The price sends a message. The price conveys a feeling of value to the customer: Thus, a high price can mean for one customer an expression of "luxury", for another an expression of "too expensive!", for a third "reasonably priced!" and for the fourth customer: "fits!"

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The achievable sales price is in a defined relationship to the market price. The sales price must find a justification to deviate from the market price - the competitors. It must not fall below the cost price in the long run.

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The following considerations are helpful in justifying the selling price:

- What is the relationship between the sales price and the market price and cost price of the company? Maximum price, high price, normal price, low price, dumping price?
- Sales price in customer evaluation: How do customers rate the offer? What is the customer benefit? Unit price and individual price?
- Price sensitivity of customers: How do different customers react to the sales price.
- Optimal price structure: What is the optimal price structure for the company's services? Which price variants and target groups should be distinguished in the sales price?
- Competitor reactions: What prices are the competition taking? How will you react to the new offer and the new selling price?
- The prices actually achieved must be determined: What is left after deducting discounts and rebates? What prices are actually achieved in reality? What does the final costing look like?
- Selling price and market price: How do the two relate to each other in concrete terms? Is the sales price in line with the market?

Pricing decisions have a strategic significance. They have a communicative effect for the company.

## 4.3 Financial planning

The task of **financial planning is to** determine the capital requirements of a company and to ensure the procurement of capital. The determination of the company's goals must be harmonised with the goals of financial planning.

**Capital requirements** arise from the fact that the company has to make investments and expenditures that are not directly matched by any income, or at least not by income of the same amount. The capital requirement calculation determines to what extent and at what time capital is required.

Financing and raising capital is a complex challenge for many entrepreneurs. For a start-up, it is as much about initial investment as it is about liquidity management.

Funding includes:

- The **financial plan** determines what the capital is to be used for and how it is to be raised (use of capital, investments, etc.).
- The **capital requirements calculation**, it determines how much capital is needed.
- The **use** and raising of **capital is** also referred to as financing.

### 4.3.1 Capital appropriation

Every company needs capital. This involves raising capital for operational occasions. These can be:

- Start-up capital to finance a start-up or the establishment of a company,
- Capital for financing a business acquisition or business succession,
- Capital to finance investments,
- Capital to pre-finance the first stock of goods,
- capital to finance liquidity.

The capital appropriation must state what capital is needed for. The amount of capital must be calculated and justified. Finally, the raising of capital must ensure that sufficient equity and debt capital is available.

The inappropriate use of capital is a burden on every company.

What needs to be financed, for example:

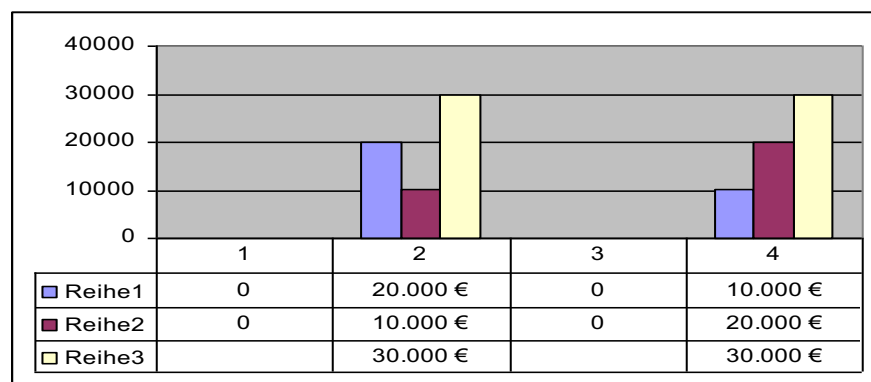
- **Start-up financing:** When founding a start-up, a distinction must be made between a) investments before the start-up and b) investments after the start of the business activity, c) reported start-up costs.
- **Business sector:** Capital requirements differ significantly between different business sectors and industries. A manufacturing company or a construction firm need significantly more capital than an individual management consultant or sales representative. The type and amount of capital required depends on the industry.

- Company size:** The amount of capital usually depends on the size of the company or the individual business. More capital is needed to start a shop than to start an internet company.
- Turnover rate :** It indicates how often a company sells goods within a defined period. To achieve an annual turnover of goods of € 120,000, a monthly turnover of € 10,000 is needed 12 times; if the turnover is twice, it is twice as much. If the goods have to be financed in advance, the capital requirement increases accordingly. If the company did not have enough capital for this, business expansion would not be possible.
- Payment terms and delivery credits:** They act like credit transactions. The longer the payment term, the higher the capital requirement for the seller and the lower the capital requirement for the buyer.

### 4.3.2 Raising capital

**Capital** and **assets** balance each other out in a company's balance sheet. The capital side is contrasted with the assets in which the capital is tied up in the company. Capital is considered the sum of the values on a balance sheet. The operating assets denote the value of the property of a company.

<i>Assets</i>	<b>Balance sheet</b>		<i>Liabilities</i>
Fixed assets	20.000 €	Equity	10.000 €
Current assets	10.000 €	Debt capital	20.000 €
Balance sheet total	30.000 €	Balance sheet total	30.000 €



The **source of funds** asks about the origin of the required capital. A distinction must be made between equity and debt capital.

**Equity** makes the company independent of external influences. The company is not threatened by the withdrawal of operating funds as a result of a loan termination. It is crisis-proof. High

equity capital makes it easier to obtain loans. Equity capital should be at least as high as the fixed assets (e.g. business equipment) that form the basis of the enterprise.

When founding a company, equity should not be less than 10 - 20 % of the total capital.

Sources of equity are:

- *Cash*, bank deposits, securities;
- *Entrepreneurial capital* can be granted through ERP loans;
- *Relatives and friends* can provide capital;
- *Partners and shareholders* can also join a company as partners. In return, they may want a say and an interest on the capital invested.
- *Equity investment companies* enter the market as private or publicly funded investment companies. They provide capital to (young) enterprises that they cannot raise from their own savings or cannot obtain from banks due to a lack of collateral. Participations can be granted by state-owned companies under certain conditions from € 50,000. Private investors, such as "venture capital" are usually more interested in investments in "millions". They want to earn much higher returns.

**Debt capital** is to be procured in the form of loans. A **loan** is the temporary transfer of money or material assets in exchange for money (interest) between an investor (creditor) and a borrower (debtor). The capital provider trusts in the debtor's future willingness and ability to pay.

Credit is the external capital provided to a company in the form of money or material goods, e.g. from a bank.

There are favourable start-up loans from public funding programmes for start-ups. These can be applied for at the house bank. They are granted by the "Deutsche Ausgleichsbank".

The financing of debt capital:

- **Start-up loan**  
The start-up loan is the most important form of financing for start-ups. There are separate funding programmes for this.
- **Loans** from banks, savings banks or Volksbanks are granted at any time at standard market conditions. They can be used by any company for financing - provided the company is creditworthy.
- **Overdraft-facility**  
Current account credit is also colloquially called "overdraft credit". It is the credit that the credit institution grants to the current account holder as an overdraft credit, taking into account his previous banking transactions. The amount depends on the current income and expenditure and the creditworthiness of the account holder. Overdrafts are relatively expensive; they range from 10%-18% per year. They can be used to balance short-term liquidity fluctuations. They are hardly suitable as a long-term means of payment. The credit line can be agreed with the house bank. The usual

amount is one to two months' income or monthly turnover of the credit holder or company.

- **Supplier-credit**

Supplier credit, as the name suggests, is granted by the supplier of the goods. The credit depends on the respective payment term granted by the supplier. In this sense, each entrepreneur is a creditor until the goods or services have been paid for by his customer. Contractually, payment variants can be freely agreed. Some examples:

- The goods are payable immediately upon delivery without deduction.
- The goods are payable after delivery within 7 days with 2% discount.
- The goods are payable after delivery within 30 days without deduction.
- The goods will only be delivered against advance payment.
- Supplier and buyer agree on a term of payment. Even if immediate payment is agreed, time delays in banking transactions are to be expected. The time until payment for the goods must be pre-financed by the entrepreneur. Those who are liquid should make use of cash discounts, because that is how quickly cash can be earned.

- **Bill of exchange**

The bill of exchange is a means of payment. In the bill of exchange (deed), an obligation is assumed, detached from the reason for the debt, to pay a certain sum of money to the legitimate holder of the deed. Bills of exchange are issued, for example, to pay for goods at a later date. At the same time, the bill of exchange can be used to pay one's own debts. The supplier does not ask for money at first, but for a bill of exchange. It contains the name, the amount and the period of validity. It can be honoured within the period of validity to settle own debts to another creditor.

The bill of exchange must be paid to the last creditor noted, i.e. the owner of the bill of exchange, on the due date.

**Creditworthiness** plays a prominent role in business life and especially in a start-up. Credit involves trust in the will and ability of a person or company to properly fulfil its obligations (psychological level); on the other hand, performance (material level), which is made in the confidence that the consideration will be properly provided at a later date. Creditworthiness serves to monitor and examine the personal and material criteria of a company seeking credit. The legal, personal and economic circumstances are examined. Loans are only granted if there is a "calculable" certainty that the loan can be repaid. Today, the risk is examined for many companies according to the provisions of Basel II. Loans are always associated with risk.

**Guarantees** constitute collateral for loans. A guarantor is a person who undertakes vis-à-vis the creditor of a third party, the principal debtor, to vouch for the third party's obligations. This, for example, in the case of insolvency. A distinction can be made between private and public guarantees.

In the case of a loan guaranteed by a company, the owner, for example, undertakes to be liable with his personal assets by means of a personal guarantee. For example, a loan is usually only granted to a limited liability company if the shareholder assumes personal liability. In addition to the borrower (the company), another person is liable for interest and repayment (redemption). The same requirements are placed on the guarantor's ability to pay as on the

borrower. The guarantee amount is usually higher than the loan amount so that interest and other costs can be paid from it.

Public guarantees are granted by guarantee banks. A guarantee bank stands surety for a borrower. They can provide deficiency guarantees if the available capital is not sufficient. Indemnity guarantees are fully-fledged guarantees for credit institutions or banks. However, they are usually only issued for up to 80% of the amount for which a guarantee is requested. A guarantee loan costs interest. Guarantee programmes are available from KfW Mittelstandbank.

### **Equity capital**

Start-ups and entrepreneurs often encounter the fact that banks do not want to give loans for a business idea. This is the case when the prospects of success are difficult to assess. Investment companies or private investors can help here.

Equity capital is often also regarded as venture capital. From the point of view of a capital company, venture capital is to be treated like equity capital, because the financier participates directly in the start-up or the company.

There are currently about 200 private equity companies in Germany. Information on this is provided by the Bundesverband Deutscher Kapitalbeteiligungsgesellschaften (BVK) in Berlin.

### **Lease financing**

In lease financing, medium and long-term rights of use to movable and immovable assets and goods are acquired by means of rental or lease agreements. The lessor who rents out a leasing object remains the legal and economic owner of the object. Use is transferred to the taker in return for a rent.

The term depends on the useful life of the item. For example, car leasing is common for three years. Equipment and machines are leased for 3 to 5 years. If the use is still economical after that, the contract can be extended with a lower lease rate.

The rental rate depends on the respective object and the competitive situation in the market. Different financing models (with partial down payments, residual payments) are common. The costs for leasing are between 1% - 5% of the respective purchase price. There is also 0 % leasing in car leasing.

Financing through leasing is advantageous because the company does not have to take out bank loans for it, which have to be secured by guarantees or other collateral. The leasing costs are directly operating expenses. Leasing thus creates liquidity.

A **profitability calculation** can show whether borrowing is worthwhile. Borrowing costs interest and fees. Capital costs are all expenses that have to be incurred in order to be able to draw on financial resources as equity or borrowed capital. The return on the use of borrowed capital should be higher than the cost of the respective loan.

### Forms of financing

Source of funds Rights of the Capital provider	External financing (via Financial Markets)	Internal financing (from turnover processes)
<b>Equity</b>	<b>Equity</b> in the form of a contribution or participation	<b>Self-financing</b> - Asset reallocation - Retention of profits from releases of funds such as provisions such as depreciation
<b>Debt capital</b>	<b>Debt capital</b> in the form of credits, loans, grants, (leasing, franchising)	-Asset reallocation, - Sale of property

In **internal financing**, the financial resources arise from the business activity. It is surpluses or sales revenue, which is also called cash flow financing. Depreciation of assets (Afa) as well as reserves from profits or provisions (capital that is temporarily invested or pension provisions) also belong to the area of internal financing. In addition, internal financing takes place through asset restructuring, e.g. sale of property. Rationalisations can also constitute internal financing.

### 4.3.3 Cost of capital

The **cost of capital** is also called the cost of financing.

General borrowing costs

Anyone who raises capital must pay money market costs for it. This is usually interest. Interest is granted for the provision of a loan. Interest is income for the creditor and expenditure for the debtor.

The repayment of a loan takes place through redemption.

The discount is a reduction by which the loan is brought below the nominal value of the loan.



**Overview of capital costs and types of capital**

Cost of capital	Types of capital	Examples
One-off capital costs (start, end)	Procurement costs	Commissions Processing fees Discount (markdown) Issuing costs Collateral costs
	Repayment costs	Repayment Fees Repayment discount Costs for restitution of collateral
Current capital costs	Capital utilisation costs Debt service costs Market maintenance costs	Interest Overdraft commissions Profit distributions Commitment fees Income tax Corporation tax Trade tax Coupon redemption costs Costs for stock exchange publicity Costs for market cultivation

The following example shows the calculation of a loan.

Example loan conditions: Nominal value €25,000; discount 10%; n = term, 3 years; t (tempus) = year; percentage rate = 7%; annual fees 0.5% of nominal committed

Capital

Laufzeit		t=0	t=1	t=2	t=3	
		2004	2004	2005	2006	Summen
<b>Kreditaufnahme</b>		<b>25.000 €</b>				
Disagio	10%	2.500 €				
Zinsen	7%		1.750 €	1.295 €	1.015 €	4.060 €
Tilgung	fest		4.000 €	4.000 €	4.000 €	12.000 €
Gebühren	0,50%	250 €	113 €	93 €	73 €	528 €
Zahlungsfolge	jährlich	2.750 €	5.863 €	5.388 €	5.088 €	19.088 €
<b>Restkredit</b>		<u>22.500 €</u>	<u>18.500 €</u>	<u>14.500 €</u>	<u>10.500 €</u>	

Duration		t=0	t=1	t=2	t=3	
		2004	2004	2005	2006	
Credit volume		25.000,00 €				
Disagio	10%	2.500,00 €				
Intrest	7%		1.750,00 €	1.295,00 €	1.015,00 €	4.060,00 €
Repayment	Fixed		4.000,00 €	4.000,00 €	4.000,00 €	12.000,00 €
Service costs	0,50%	250,00 €	113,00 €	93,00 €	73,00 €	528,00 €
In turns of	yearly	2.750,00 €	5.863,00 €	5.388,00 €	5.088,00 €	19.088,00 €
Left over Credit		22.500,00 €	18.500,00 €	14.500,00 €	10.500,00 €	

After deducting the discount, the company has a loan amount with a nominal value of € 22,500 at its disposal. The repayment amount is fixed. The annual debt service results from the payment sequence. It is to be taken into account in the cost accounting or P&L.

### Loans for start-ups

Start-ups can take advantage of special funding programmes. Funding requires that the applicant has sufficient technical, commercial and personal competence to set up a business. Founders of an ICh-AG will have to provide evidence of a business plan.

- Entrepreneurial capital becomes: ERP capital for start-ups (0-2 years)
- StartMoney, Microloans
- Advisory support, business development, employment office, IHK, HWK, advisory centres
- Investment allowances for the new federal states in the east and Berlin
- KfW Entrepreneur Loan (Kreditanstalt für Wiederaufbau, Deutsche Ausgleichsbank)
- Special depreciation allowances and savings depreciation allowances for the promotion of SMEs pursuant to § 7 g EStG (Income Tax Act),
- Investment grants as a joint task for the improvement of the regional economic structure
- ERP programmes for investments and innovations
- Equity capital for small technology companies
- ESF funding for SMEs

The funding programmes are constantly being changed. They can be viewed in the internet database of the Federal Ministry of Economics and Labour: [www.bmwa.bund.de](http://www.bmwa.bund.de) or BMWA-Gründerportal: [www.existenzgruender.de](http://www.existenzgruender.de)

### Deadlines

Meeting deadlines is a key parameter for financing. Usual terms are:

- Short-term loans should only be used for the procurement of current assets. Maturity of up to approx. 1 year; In the case of an overdraft, the current account is drawn down by overdraft. The interest rates are very high. Goods credits are used until an invoice is paid.

- Medium-term and long-term loans enable the company to plan far-sightedly and secure it against short-term capital withdrawal. Medium-term 1 to 5 years, e.g. credit for equipment investments. Long-term 5 years or more, e.g. debentures, depreciation for buildings.

#### Legal status of the creditor

The legal status of the creditor plays a role in financing that should not be underestimated. It becomes important when it comes to liability and security issues. In addition, the legal form tells who can assert which property and capital claims. While in the case of a partnership, the individual is liable with his or her entire private and company assets, in the case of a corporation, e.g. a limited liability company (GmbH), the liability risk is limited to the amount of the capital contribution - which is at least € 25,000. At the same time, the distribution of profits or the allocation of losses in the case of corporations is made in the amount of the capital shares.

#### 4.3.4 Financial management objectives

The management of the company's development must be based on measurable criteria. These include profitability, liquidity, economic efficiency and, for example, productivity in manufacturing companies. The planned key figures are the basis of financial planning.

#### Profitability target

Profitability is defined by the ratio of profit to capital employed.

Most companies are financed through debt and equity capital. Interest must be paid to the lender for the debt capital. The invested equity capital must also "yield" interest, in the form of the profit or the annual surplus. If the profit meets expectations, the profitability target is achieved.

Return on equity =	Profit	* 100
	Equity	

If the equity and debt capital are taken as a basis and the interest expense for the debt capital is added to the profit, the result is the return on total capital or corporate profitability.

In the case of a partnership, the entrepreneur's salary must first be deducted from the profit.

Return on assets =	Profit + interest expense	* 100
	Total capital	

Return on sales determines the ratio of profit to sales revenue.

Example:

Equity	300.000 €	Total capital
Debt capital	200.000 €	
Profit	40.000 €	
Interest	10.000 €	

- Return on equity:  
 e.g.: 40.000 €: 300.000€ \* 100 = 13,3 %
- Return on total capital:  
 e.g.: 40.000 € + 10.000 €: 500.000 € \* 100 = 10 %

Return on sales =	Profit	* 100
	Sales proceeds	

Information on profitability comparisons is published, for example, for the retail trade by the "Institute for Trade Research", University of Cologne. Comparative data on sectors is also available from the chambers of commerce. Profit margins for small traders are determined by the regional tax offices with the help of reference rate collections.

**Target liquidity**

Liquidity means being solvent at all times. This is one of the most essential foundations of any business activity. In other words, insolvency and over-indebtedness threaten the continued existence of the company and usually lead to insolvency.

Building on short- and medium-term financial planning, the capital structure should be aligned in such a way that financial imbalances are avoided. In this context, finance speaks of the financial equilibrium of the company. The financial equilibrium of a company is established through the careful coordination of four factors:

- Amount of capital required,
- Source of capital raising,
- required capital utilisation period,
- Repayment agreement (capital transfer period).

Long-term capital commitments (fixed assets) should be financed through long-term financing (equity and long-term debt). The so-called floor of current assets (inventories and outstanding receivables) should also be financed on a long-term basis.

As a rule of thumb, at least one, preferably several months' sales should be available as liquidity.

### Goal Economic efficiency

Profitability is defined as the ratio of income to expenditure.

Economic efficiency =	Yield	* 100
	Effort	

Examples	Product A	Product B
Sales proceeds	40.000 €	24.000 €
Total expenditure	25.000 €	26.000 €
Economic efficiency	1.6 or 160 %	0.92 or 92 %

### Productivity target

Productivity is largely due to technical progress. Productivity determines the productivity of economic activity. It is measured by the quantitative output per day, per hour, per employee, per machine, per unit.

Economic considerations play no role in determining productivity. It says nothing about profitability.

Productivity =	Production output (output in pieces, kg, etc.)	* 100
	Use of material quantity, working time, etc.	

### 4.3.5 Financing errors

Typical **financing mistakes** should be avoided. These include:

- too little equity capital,
- no timely negotiations with the house bank,
- Use of the overdraft facility to finance investments,
- high debts to suppliers,
- inadequate planning of capital requirements,
- public financial aid is not applied for, even though it is cheaper,
- Payments and deadlines are not met,
- financial overload due to seemingly favourable loans.

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## 4.4 Capital requirement calculation

The calculation of the **capital requirement** is determined by the way in which the capital is used. A distinction can be made between:

- **Fixed assets** (e.g. investments) are calculated by adding the acquisition costs incurred for the goods in the fixed assets, e.g. machinery, equipment, start-up investments.
- **Current assets** (e.g. inventory turnover) are determined by multiplying the commitment period of the current assets by the average daily expenditure on them and adding the results:
- **Total capital requirement** (e.g. liquidity forecast) is determined from the difference between expenditure and income over time. In other words, by adding up the fixed capital and working capital requirements.

### 4.4.1 Investments

**Investing** means investing capital for a specific purpose. The term "investment" (Latin: investire = to clothe) means the "clothing" of the enterprise with assets for the purpose of enabling the performance process within the enterprise. Investing is thus a core function of all economic activity.

The investment can be interpreted as a disbursement for the procurement of goods, the utilisation of which is expected to generate cash inflows that (significantly) exceed the disbursements in the long run. The success of investments is uncertain. Whether an investment is advantageous from the perspective of an entrepreneur depends on his expectations of profit and return as well as his willingness to take risks.

Investments are made in fixed assets such as land, buildings, machinery, financial investments on the capital market, research and development, as well as in acquisitions that are used for the longer term to fulfil operational purposes, e.g. trade fair stands for advertising, marketing concepts, licences or rights.

Any disbursement that is associated with the expectation of generating future cash inflows can be described as an investment. However, such a broad term for investments is only of limited use. Therefore, only those disbursements that result in longer-term utilisation potentials or asset positions, such as acquisitions or investments on the capital market, should be described as investments.

Investments must be economical. The amount of capital must be fixed in such a way that it is economical in the long run, i.e. it yields more return than it costs.

#### Justify investments

- Why is an investment necessary?
- What equipment, plant, machinery or facilities does the company need? The quality and the customer benefit are to be determined.
- Which equipment, etc. is the cheapest for the company?
- How should the equipment, etc. be utilised? The degree of utilisation is to be determined, capacity planning is to be carried out.

- At what time is the equipment needed?

How can the necessary capital for the investment be raised on time?

### **Types of investment**

Investments can be distinguished:

Performance readiness investments: new investments when starting or expanding a business, replacement investments when machinery is lost or worn out.

*Investment in tangible assets:* Creation or modification of material performance potential in fixed assets (e.g. purchase of machinery) or in current assets (e.g. stock replenishment). According to the investment motive, they are further subdivided into construction, expansion, rationalisation, conversion, diversification, safeguarding and replacement investments.

*Intangible investments:* Creating or changing intangible performance potential (e.g. capital commitments for patents, licences, product research, process research, personnel development, organisational development, marketing).

*Financial investments* create capital commitments with which participation or claim rights are acquired, either in order to generate the highest possible return with a defined risk or in order to draw benefit from the financed company, e.g. by influencing its business policy or to secure a cooperation.

### **Economic efficiency of investments**

When planning investments, economic efficiency must be examined. The focus is on the capacity and utilisation of the investment. The necessary capacities must be determined for a company. Capacity is understood to be the performance capacity of an enterprise within a certain period of time, measured in terms of production or output. It depends on the plant and machinery, the company organisation and the employees.

The type and amount of investment must be adapted to the operational requirements. The question is, what capacities are needed?

- The maximum capacity (maximum capacity) indicates what a firm is capable of achieving. The maximum capacity cannot last in the long run if it is not expanded.
- The normal capacity indicates what the firm is capable of achieving in the long run at full capacity. It is therefore lower than the maximum capacity.
- The minimum capacity refers to the utilisation at the lower limit that is necessary in order to still be able to carry out the production or service at all.

### **Time**

The timing of an investment must be determined according to economic considerations. The financing of an investment must be made on time. This means that at the time of acquisition and payment, the liquidity for it must be established.

In the case of start-ups, a distinction must be made between the time of acquisition before and after the start-up.

- Investments that have to be paid for before the foundation can be considered foundation investments, those afterwards are new or replacement investments.
- The sum of the start-up investments can be written off in the business plan as upfront costs. This must be taken into account in the liquidity calculation.
- Investments made after the foundation of a start-up or in an existing business must be capitalised at the time of payment. This means the cash flow has an impact on the liquidity statement and the income statement. From the time of payment, depreciation is to be taken into account in the P&L with the corresponding depreciation rates.

### **Investment calculation**

Investment has been defined as the acquisition of an economic good to be used in the long term. Investment is characterised by the fact that capital is used in the present in order to gain an advantage in the future. This is an expression of entrepreneurial action.

The investment process begins with the mental anticipation of an asset to be procured. Investment planning is oriented towards the company's investment goals and is the first stage, which is followed by investment implementation and control. Investment plans have a prominent role because they are used to decide whether and in which business area new projects can be organised. Investments must create the resources to realise the company's goals.

The investment decision is of strategic importance. If institutions did not invest, they would sooner or later become so obsolete that they would no longer be able to carry out their business activities. Investment appraisal can assist in the decision-making process:

### **Case study: Investment calculation of an EDP system**

Investments are based on a large number of forecasts. This can be clearly illustrated by the model of payment sequences: Payments and receipts are linked to each other during the useful life (*Grob 1994, p 956 ff*):



### Payments

Disbursements	Deposits
Acquisition payment: e.g. EDP system € 75,000	Payments received in the course of the use of the investment property
Disbursements in the course of the useful life of the investment object: e.g. maintenance costs, interest, personnel deployment	Sales proceeds: Cash inflows from liquidation of the investment property
Payout through liquidation of the investment object	

The liquidation value indicates the proceeds that would ultimately be realised if the IT system were sold. The sale price can be considerably lower than the book value.

#### Sample data:

The investment object (IT system) can be procured at a price of € 75,000. The payment is due in  $t = 0$ . It is paid from the existing bank balance (equity capital). At this point the asset is fully operational. In the investment calculation, a useful life of 5 years is planned. During this period, constant payments of € 13,500 per year are made for the maintenance of the system.

The facility should be able to train a maximum of 300 participants per year. Because the facility has the latest user programmes, the utilisation rate after the start-up phase is higher in the first three years than in the last two years. The projected development of demand could be as follows:

Year	t =1	t=2	t=3	t=4	t=5
Demand/participants	210	285	295	195	185

The participant-related costs should be set at an average of 200 € for materials, energy consumption, fees. They are expected to increase by 10 € per year.

The participant fee is to be € 310 per course. For further development, an annual increase of 10 € from the price of the previous year is to be assumed.

At the end of the five years, a liquidation surplus of € 7,500 should arise because the plant can be used further. All costs and revenues should result in payments out and payments in, respectively, in the same year. The payment sequence of the investment has been calculated using the above data with an Excel programme as follows (figures have been rounded for simplicity).

**Example calculation:**

Time lapse in the year	t=0	t=1	t=2	t=3	t=4	t=5	Total
<b>Acquisition payout</b>	<b>75.000 €</b>						
Capacity		300	300	300	300	300	
planned participants		210	285	295	195	185	
Participant fee		310 €	320 €	330 €	340 €	350 €	
Sales revenue = Payments received		65.100 €	91.200 €	97.350 €	66.300 €	64.750 €	<b>384.700€</b>
variable TN costs		200 €	210 €	220 €	230 €	240 €	
variabl. Disbursements		42.000 €	59.850 €	64.900 €	44.850 €	44.400 €	<b>256.000 €</b>
fixed costs = disbursements		13.500 €	13.500 €	13.500 €	13.500 €	13.500 €	<b>67.500 €</b>
Liquidation surplus						7.500 €	<b>7.500 €</b>
<b>Payment sequence of the investment</b>		9.600 €	17.850 €	18.950 €	7.950 €	14.350 €	<b>68.700 €</b>

With the investment, a total turnover of € 384,700 could be achieved in five years. The surplus would be € 68,700 after deduction of the calculated costs and plus the liquidation surplus. That would be a 17.8 percent return.

If the capital of € 75,000 were invested with a bank at an interest rate of 3.5 %, the interest would be € 13,125 in five years. The investment shows a much better result.

Of course, the financial reality in business is more complex. Especially when the investment capital has to be borrowed from a bank. As borrowed capital, it must be serviced from current income. Taxes and duties are also incurred. Such a further consideration can initially be neglected in a business plan.

#### 4.4.2 Capital appropriation - overview

		Time	Appointment	Afa	Afa
Capital appropriation in euro	Total Sum	Before Foundation	After Foundation	Duration in months	Amount monthly
Performance readiness investments (1)	Euro	Appointment	Appointment	Months	Euro
Machines: Production machines, packaging machines, special machines	10.000 €	7.500 €	2.500 €	60	167 €
Vehicle fleet: Company car, truck, van, delivery van	Euro	Euro	Euro	Months	Euro
Business equipment: IT software & hardware, interior design, office, warehouse, traffic routes, reception, outdoor facilities,	Euro	Euro	Euro	Months	Euro
Company website Image brochure, initial advertising, company signs, logo development	Euro	Euro	Euro	Months	Euro
Patent, licence, franchise fees Concept development costs	Euro	Euro	Euro	Months	Euro
Other	Euro	Euro	Euro	Months	Euro
<b>Sum from (1)</b>	<b>Euro</b>	<b>Euro</b>	<b>Euro</b>	<b>Months</b>	<b>Euro</b>
Investments for the production of services (2)					
Raw materials, consumables and supplies, intermediate products, finished products for further processing	Euro	Euro	Euro	No depreciation,	Euro
Warehouse initial equipment,	Euro	Euro		No afa	Euro
Other	Euro	Euro	Euro	Check	Euro
<b>Sum from (2)</b>	<b>Euro</b>	<b>Euro</b>	<b>Euro</b>	<b>Months</b>	<b>Euro</b>
Foundation costs (3)	Euro	Euro		Check afa	Euro
Consulting, concept development	Euro	Euro	Euro	dto.	Euro
Notary	Euro	Euro		No afa	Euro
Registrations/entries	Euro	Euro		No afa	Euro
Education and training costs	Euro	Euro	Euro	No afa	Euro
Deposits for rent	Euro	Euro		No afa	Euro
Preliminary costs to cover the Liquidity gap	Euro	Euro		No afa	Euro
Other	Euro	Euro	Euro	check	Euro
<b>Sum from (3)</b>	<b>Euro</b>	<b>Euro</b>	<b>Euro</b>	<b>Months</b>	<b>Euro</b>
<b>Total capital requirement from (1-3)</b>	<b>Euro</b>	<b>Euro</b>	<b>Euro</b>	<b>Months</b>	<b>Euro</b>

Table 2: Capital appropriation

The list of capital utilisation indicates a broad spectrum of possible uses. The founder must find out about this individually, in relation to the respective business plan, and make an economic decision.

For each investment, a decision must be made beforehand as to whether it is necessary, whether it will yield the hoped-for economic return, or whether another type of acquisition is possible. For example, the purchase of a motor vehicle that is used exclusively for company purposes is currently cheaper to procure through leasing than to finance with one's own capital. This can mean that the acquisition of a motor vehicle is necessary, but that it is not represented as an investment in the capital requirements calculation, but must be taken into account in the ongoing operating costs in the form of a leasing instalment. The consequence of this is a reduction in investments and thus a reduction in the necessary financing with equity capital or borrowed capital.

Comparable considerations should be made when it comes to necessary business equipment that could be financed by a manufacturer, trader, licensor or a third party. Equipment investments in a restaurant could, for example, be provided by a brewery for a rental fee.

#### 4.4.3 Raising and securing capital

**Raising capital** is a prerequisite for founders and companies to be able to realise a business at all. The following table can be used to check and determine what capital is needed and what collateral is available for it.

##### Example equity capital

Raising capital Euro	Total	Date before foundation	Date after foundation
<b>Existing equity capital</b>			
Cash assets	10.000 €	10.000 €	€
Bank balances	20.000 €	20.000 €	€
Contributions in kind necessary for operations	5.000 €	€	5.000 €
Own work, e.g. car, licence (if capitalisable)	€	€	€
Loans to relatives	5.000 €	€	5.000 €
Donations	5.000 €	€	5.000 €
<b>Total equity</b>	<b>45.000 €</b>	<b>30.000 €</b>	<b>15.000 €</b>
Building loan contracts*	Only conditionally EK		
Life insurance*	Only conditionally EK		

The sum of equity capital should not be less than 10 - 20 percent of fixed assets. Once the amount of equity capital has been determined, it is necessary to establish how high the borrowed capital must be, measured against the total capital requirement.

\*Bauspar contracts **or life insurance policies** represent a special form of equity capital. As a rule, building savings contracts are not immediately available and must be used for the specified purpose - provided they are endowed with public subsidies. In principle, only the savings contributions paid in are equity capital. In the event of an early payout, only the savings contributions paid out would be capitalisable. However, if a property or land is to be acquired for a business, the disbursable savings amount could be accepted as equity. Interest and repayment would be recognised as current business expenses. In addition, building savings contracts can serve as collateral.

### Example debt capital

Raising capital Euro	Total	Date	
		Before foundation	After foundation
<b>Required debt capital</b>			
Loans for start-ups	50.000 €	50.000 €	€
Loans from special subsidies	10.000 €	€	10.000 €
Funding from private third parties	€	€	€
Overdraft	5.000 €	€	5.000 €
Supplier credit	2.500 €	€	2.500 €
Change	€	€	€
<b>Total borrowed capital</b>	<b>67.500€</b>	<b>50.000 €</b>	<b>17.500 €</b>

### Support programmes

Money from public funding programmes plays an important role in raising capital when starting up a business and also afterwards. The federal government, the Länder and the EU support the start of entrepreneurial self-employment through funding programmes. This is especially true in the new federal states. These are mostly loans, but also non-repayable grants. Typical features of public development loans include favourable interest rates, long terms and often a repayment-free period of up to three years until repayment must begin. This means that during this time they are free of interest and repayment.

The federal government's promotional programmes are offered by KfW Mittelstandsbank. There are additional advisory institutions in each location:

- ERP equity assistance programmes (EKH):  
<http://bmwisoftwarepaket.de/InfoArchiv/1356,1375/3023.html>
- ERP start-up programme:  
<http://bmwisoftwarepaket.de/InfoArchiv/1356,1375/3024.html>

- Entrepreneur Loan DtA-StartGeld:  
<http://bmwisoftwarepaket.de/InfoArchiv/1356,1375/3021.html>
- DtA microloan: <http://bmwi-softwarepaket.de/InfoArchiv/1356/3234.html>
- Consultancy funding: <http://bmwisoftwarepaket.de/InfoArchiv/1354/2952.html>

**Other funding programmes**

- Investment allowances
- KfW Capital for Work Programme
- Special depreciation allowances and capital allowances to promote SMEs
- Investment grant (joint task "improvement of the regional economic structure")
- ERP-Beteiligungsprogramm, ERP-Innovationsprogramm u. a., Beteiligungskapital für kleine Technologieunternehmen (BTU),

**Advice is worthwhile, it does not have to be expensive. Without advice, a lot of money can be given away.**

**Applications for public funding** must be submitted to the house bank before the start of the project. Financial commitments may not be entered into beforehand. No subsidies will be granted retrospectively (exception: investment allowance).

**Prerequisites:** Funding through public financial assistance - especially for start-ups - requires that the applicant can prove that he or she has sufficient professional and commercial qualifications. In addition, it is usually expected that the business start-up will lead to a sustainable "full-time existence" as the main source of income.

**Collateral**

Once the amount of debt capital has been determined, it must be examined which collateral can be offered to a lender. It is up to the lender to decide which collateral to accept.

Raising capital Euro	Total	Date before foundation	Date after foundation
<b>Existing collateral</b>			
House and land ownership	€	€	€
Building savings contract	€	€	€
Life insurance	€	€	€
Personal guarantee	€	€	€
Indemnity bond of a bank	€	€	€
<b>Total collateral</b>	€	€	€

- The collateralisation of house bank loans is influenced by the type and reliability of the creditor in his previous monetary transactions with the bank. Those who have always

met their payment obligations on time in the past have better chances than those who have fallen behind with their payments.

- Collateral for house bank loans can be provided by transferring the company's assets as security to the lender. If the fixed assets are not sufficient, personal guarantees of the entrepreneur are common. The personal guarantee overcomes the limitation of liability, e.g. of a limited liability company, for the bank.
- The collateralisation of house and land property may be appropriate for longer-term loans. The amount of collateral is based on the market value of the property.
- Life insurance policies can serve as collateral for long-term loans, e.g. real estate.
- 

#### Guideline value for lending limits

Land	30 - 80 % of the market value
Bank balances	100 % of the nominal value
Life insurance	100 % of the surrender value
Customer receivables	to the public sector up to 90 % of the claim amount
Customer receivables	Against other customers 30 - 50 % of the receivable amount
Customer receivables	For tax refund claims up to 100 % of the refund amount
Securities	Federal treasury bonds up to 90 % of the nominal value
Securities	Public debt securities 60 - 90 % of the market value
Shares, equity funds, bond funds, certificates	30 - 70 % of the market value
Guarantees	Depending on creditworthiness and assets
Warehouse	30 - 50 % of the cost price
Shop fittings	30 - 50 % of the current value
Machinery and business equipment	30 - 50 % of the current value
Cars	30 - 50 % of the current value
Precious metals	50 - 70 % of the metal value

Every founder and entrepreneur must determine his or her capital needs:

**Example capital requirement**

Total capital Euro	Total	Date before foundation	Date after foundation
Equity	20.000 €	15.000 €	5.000 €
+ Debt capital	67.500€	50.000 €	17.500 €
= Total capital available	87.500 €	65.000 €	22.500 €
Total capital required	<b>75.000 €</b>	65.000 €	10.000 €
= <b>Surplus/shortfall</b>	<b>12.500 €</b>	<b>0 €</b>	<b>12.500 €</b>

4.4.4 Working capital

**Working capital** is defined by the **tangible assets held as current assets**. These include:

- Inventories such as raw materials and supplies, finished goods, work in progress and merchandise.

Setting up and building up a warehouse to start a business can be considered working capital. It must be pre-financed as part of the start-up investment.

The importance of inventory is huge, particularly for manufacturing companies, especially in terms of delivery times and customer orientation.

Stocks should be large enough so that the business can always produce and deliver. However, they should not be higher than required for the economic operation of the business. Too large stocks deprive the business of liquid funds, increase interest, storage costs and the risks of spoilage, shrinkage, theft, fire, obsolescence and price decline. Stocks that are too small jeopardise sales or production readiness and may require low-priced, urgent orders.

Depending on the storage volume, the capital commitment can be of great importance for the company. The stock or goods turnover is to be determined within the framework of the calculation of working capital. The higher the turnover rate, the lower the capital employed.



The **turnover rate** is calculated as the turnover coefficient in terms of volume and value:

**Turnover rate:**

Quantitative =	Cost of sales (quantity)
	Average stock
Value =	Cost of sales (Euro)
	Average stock
Storage period =	360 days
	Turnover frequency (days, months...)

Table 3: Turnover rate

Within the framework of capital procurement, it must be determined for what purpose and in what **amount current assets** must be invested.

*Other current assets:*

- Trade receivables, which are, for example, goods, products or services that have been delivered to customers but not yet paid for.
- Receivables from affiliated companies, e.g. in a holding company or public limited company,
- Receivables from loans given by the company to third parties, e.g. suppliers.
- Bills of exchange that have been issued but not yet honoured,
- Cash on hand, balances with banks and institutions,
- Securities, shares,
- When determining the capital requirement from the current assets, it is particularly important to take into account the liabilities to third parties. Liabilities can be differentiated:
  - Liabilities to credit institutions (loans, loans from development programmes, etc.)
  - Trade payables that the company still has outstanding.

The receivables are to be compared with the liabilities in order to be able to determine the capital requirement for the current assets.

#### 4.4.5 Total capital requirement

The **total capital requirement** results from the difference

- of the available equity and the required debt capital for the financing of fixed assets (including start-up financing),
- in current assets from the necessary turnover of goods as well as from receivables and liabilities.

The capital requirement results when all income is deducted from expenditure.

Revenue	Turnover + other income
- Expenditure	Investments + Operating expenses + Liabilities - Receivables
= Capital requirement	Difference in euros

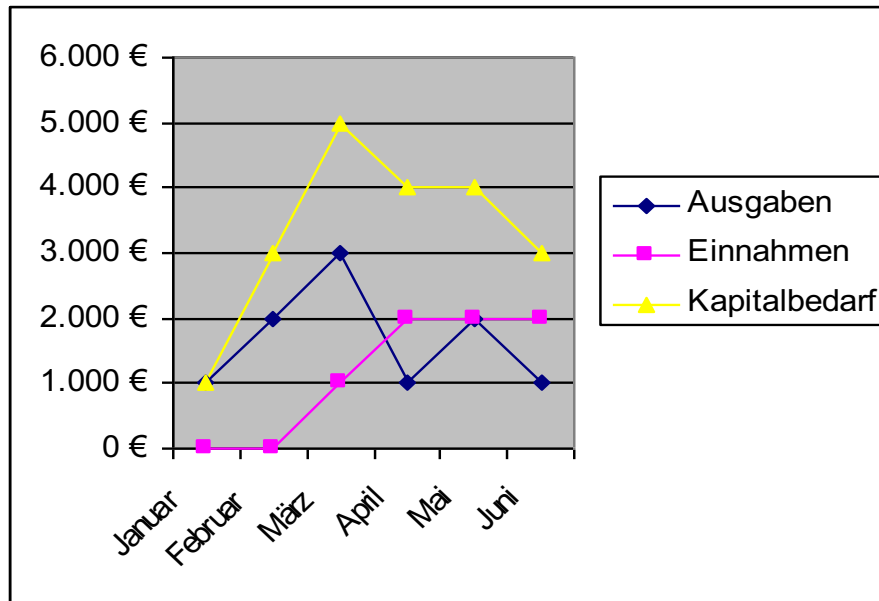
#### Calculation method

To be able to determine a funding gap, the monthly income must be subtracted from the expenses. The difference results in a profit or a loss. The profit and loss account or the income statement determines this data constantly.

In the following example, the capital requirement of an entrepreneur in January is € 1,000. Because the expenses do not cover the income, the capital requirement temporarily increases to a maximum of € 5,000; it amounts to € 3,000 in June. By the month of March, the company actually needs € 5,000 in additional capital to meet its obligations. If the money is not available then, insolvency is imminent. The maximum financing gap must be determined.

#### Calculation scheme for the capital requirement

Month	Total of all Expenditure	Total of all Revenue	Capital requirement as Difference between income and expenditure: Totals are accumulated.
January	1.000 €	0 €	-1.000 €
February	2.000 €	0 €	- 3.000 €
March	3.000 €	1.000 €	<b>- 5.000 €</b>
April	1.000 €	2.000 €	- 4.000 €
May	2.000 €	2.000 €	- 4.000 €
June	1.000 €	2.000 €	- 3.000 €



The accuracy of the capital requirements calculation depends on the available operational data. The more complex business units are, the more differentiated the capital requirement calculation must be. Simple rough calculations do not go far enough.

#### 4.4.6 Calculation of financing and liquidity gaps

When determining capital requirements, it is necessary to establish what needs to be invested and financed. Here the table on capital utilisation provides a comprehensive overview.

Financing is about how? What capital should be used to pay for the investments and the costs?

When working on a business plan, financing and liquidity gaps are particularly critical items.

- If the tangible investments are relatively easy to determine, the determination of the upfront costs is a special aspect.
- Pre-investment costs of the foundation can include investments in kind as well as fees and contributions. Overall, they can be financed as investment costs.
- Particularly in the case of start-ups, initial losses occur that lead to a liquidity gap. Preliminary costs to cover the liquidity gap can be financed as investment costs.

In economic terms, the issue of investment financing via equity and debt capital must be distinguished from the issue of depreciation.

While investments in tangible assets can be written off in full as business expenses with a defined term, start-up costs are only deductible as business expenses to a limited extent. This is to be decided in the individual case.

## Summary of the study letter and conclusion

In this study letter on business accounting and financial planning, you have dealt in detail with the topics of cost planning, cost accounting, calculation, pricing, financial planning and capital budgeting.

In the previous study letters, it was discussed how you can prove the marketability and market opportunities of your company. This is, of course, the most important factor for the success of a company, because without products that the market wants, you cannot achieve turnover and also profit. And that, after all, is the overriding goal of a business. But even the best business or product idea will disappear into oblivion in the long run if it is not based on a solid financial foundation.

It is therefore important to define very precisely what costs you will incur. If you know what your cost structure is, you will also know how many products you have to sell per month to cover the costs. And how many more products you need to sell to make a living.

Closely connected to this is the calculation of your products. What price do you have to charge to cover your costs? And are the customers willing to pay the calculated price? It gets complicated when you have many different products. Then you have to determine which product causes which costs and what price it must have.

Within the framework of financial planning, you must justify where the money for your business will come from and how you want to use it. Do you have equity capital that you want to put into the business? Do you need to take out a loan? How much capital do you need to cover? You probably won't be able to get around a loan. The decisive factor here is that you use the money in such a way that you can make the debt service, i.e. that you can pay your instalments and still have something left over at the end of the month. In order to make an assessment, it is of course also necessary to know how you are using the capital. A company car is all well and good, but you won't earn money with it alone. If you have built up a great business with nice salesrooms, but you have no money left to fill your shelves with goods, you have gained nothing.

How much money you need in total to set up and maintain the business is determined in the capital requirements calculation. What does it cost to set up the business, how much money do you need for goods and what are the running costs for rent, etc. are the relevant questions. From this, the total capital requirement must be determined.

