

Cultural features: Values, Norms, Rituals, Stories & Myth, Language rule and use, Symbols

Cultural elements: Power distance, Individualism, Masculinity, Risk avoidance, Long-term orientation

SW04/05 Marketing I

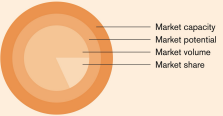
Marketing plan



Typical Question for 1. and 2.

1. 'how big is the market volume?'
2. 'why does a customer buy a particular product?'

Quantitative market analysis : Market size



Qualitative market analysis: Motives for a purchase behaviour:
What does a business customer want?

Buying behaviour

Phase	Description	Example: Purchasing first car	Purchase decision type	Description
1	Emergence of demand	Need for mobility, which is to be satisfied with a car	True decisions	Made only occasionally. The information needs of consumers are particularly extensive. The comparison of various alternatives requires a long decision-making period.
2	Different decision-making processes, information acquisition and processing	Price comparison, comparison of different car brands and models	Partial decisions	Concern everyday goods and are therefore made relatively often. The consumer shows behavioral habits in the choice of product and brand.
3	Selection of a product/intention to purchase	Decision on a car, specifically on a particular brand and model	Partial decisions	
4	Buying behavior	Buying the car	Final decisions	Experiences gained from previous purchases within the same product group. For the purchase of these products, only a limited number of information sources will be used and a few alternatives considered. The existing decision-making criteria are not tested if necessary.
5	Use and information gathered	Use of the car		
6	Disposal	Disposal of the car		

Marketing strategy: Market segmentation + Positioning

Example: Jeans brands.

Positioning along the two dimensions of (1) geographic region and (2) level of income.

Objective: Determine the position of the product offered in relation to the competition.

Modelling Consumer Behaviour I: Individual Choice and Individual Demand for Goods and Services

Basic assumption: Homo Oeconomicus (economic man)

-Agents are rational : no systematic biases, usage of all available information about opportunities and other constraint

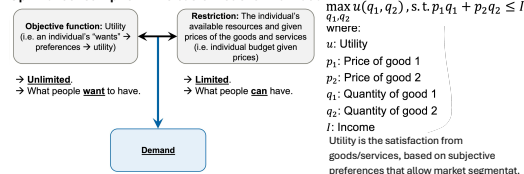
Criterion	Characteristic	Example
Geographic	- Territory - Population density - Climate - Language	- German-speaking Switzerland, Western Europe - Rural, urban - South, north - French, German
Socio-demographic	- Age - Gender - Income - Occupation, banker - Education	- 20- to 30-year-olds - Male, female - Average earners - Carpenter, banker - Academic, non-academic
Value and behavior	- Value system - Lifestyle - Type of recreation - Buying motive	- Individualism, discipline, thrift - Leisure orientation, career orientation - Movie, outdoor sports - Quality, price, prestige

optimally

-Positive statement: Economic man is a working hypothesis that is used for making predictions.

-Not a normative statement: Economic man is not a value judgement on how humans should behave.

Optimal consumption : The basic model of individual choice



Optimal consumption: An individual's demand for a good or service

An increase in price of a good or service causes an individual to reduce the quantity he demands of that good or service.

Ceteris paribus!

The solution of the individual's optimal consumption problem – and hence the individual demand curve – is only valid for:

- Given prices of other goods. • Given income of the individual. • Given tastes of the individual.

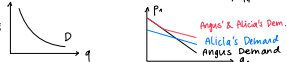
Modelling Consumer Behaviour II: Market Demand for Goods and Services

Market demand for good or service

Market demand for a good or service is made up by all the individuals who participate in that market.

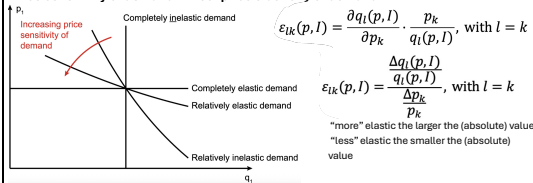
Key insight

As the price of good 1 increases, the quantity of good 1 demanded by all consumers participating in the market (market demand) decreases.



Modelling Consumer Behaviour III: Measuring Price Sensitivity of Demand for Goods and Services

Price sensitivity of demand: Direct price elasticity of demand



Determinants of direct price elasticity

Availability of substitutes: More close substitutes → more elastic demand (e.g., butter vs. margarine).

Existential goods vs. luxury goods: Necessities → inelastic; luxuries → elastic (e.g., water vs. diamonds)

Time horizon: Longer time → more elastic demand

SW06 Marketing II

Overview : The 4Ps model

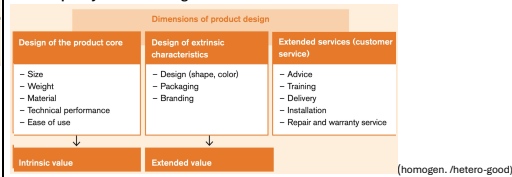
Product: What product performance and design will meet customer needs?

Price: How must prices and conditions be designed so that they are acceptable to the customer?

Place: Where can the product reach the customer in the simplest, fastest and most cost effective manner? What distribution channels should be used?

Promotion: How can the enterprise make customers aware of and convinced of the product?

Product policy: Product design



Pricing policy		
A firm's pricing policy aims to determine the optimal price to maximize profits, aligning with its overall objective. Since price and quantity sold are closely linked, pricing decisions cannot be made independently of quantity decisions.		
Demand orientation	Cost orientation	Competition orientation
Starting point: Willingness to pay	Starting point: Cost of the product for the enterprise	Starting point: Competitors' prices

Cost oriented price determination Minimum price = covers production cost. To set this, we must understand cost structures, 3 cost models : linear, convex, S-shaped

Definition of cost differentiate between accounting cost and economic cost

Accounting cost: stresses out-of-pocket expenses, historical costs, depreciation, and other bookkeeping entries (e.g. for taxation reasons)

Economic cost: focus more on opportunity cost: Opportunity costs are what could be obtained by using the input in its best alternative use, Payment needed to keep input in current use

Price determination: Cost oriented – definition

FC: Fixed Cost (c_F): Fixed cost remain fixed when the quantity produced changes, are the cost associated with deploying fixed factors of production. Incurred even if output = 0

VC: Variable Cost (c_V): Variable cost increase with increasing quantity of production, and they decrease with decreasing quantity of production, Variable cost are the cost associated with deploying variable factors of production, Zero if output = 0

TC: Total Cost (c): $TC = FC + VC$

"S-Shaped" cost function: The most general case

The cost function describes the minimum cost of producing any given level of output. The cost function is the result of optimal choices of input factor combinations.

AFC: Average Fixed Cost: Fixed cost per unit produced. $AFC = \frac{FC}{q}$, not defined for $q=0$

AVC: Average Variable Cost: Variable cost per unit produced. $AVC = \frac{VC}{q}$

ATC: Average Total Cost: $ATC = \frac{TC}{q}$, also $ATC = AFC + AVC$ (q =quantity produced)

Price determination: Cost oriented – factors

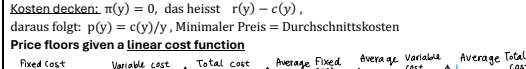
Profit (Gewinn): $\pi(y) = r(y) - c(y)$ (profit = revenue – cost (total cost))

Revenue (Umsatz): $r(y) = p(y) \cdot y$ (revenue = price received * quantity sold)

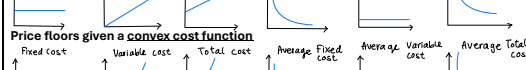
Kosten decken: $\pi(y) = 0$, das heisst $r(y) = c(y)$.

daraus folgt: $p(y) = c(y)/y$, Minimaler Preis = Durchschnittskosten

Price floors given a linear cost function



Price floors given a convex cost function



Long-term price floor: Price equals average total cost, i.e. the sum of average fixed and average variable cost.

Short-term price floor: Price equals average variable cost

→ For profits to be positive, the price must be larger than the long-term price floor

Remarks: Reaction of cost to input price changes

- If the price of an input increases, the cost will increase.
- The increase in costs will be largely influenced by the relative significance of the input in the production process.
- If firms can easily substitute another input for the one that has risen in price, there may be little increase in costs.
- It is important to measure the substitution of inputs in order to predict how much costs will be affected by an increase in the price of an input (e.g. due to a tax increase)

Price determination : competition oriented - Forms of market structure

Perfect competition	Monopolistic competition
• homogeneous products exist • Very (perfectly) elastic demand • Firms are price takers	• Differentiated products, but substitutes • Demand is fairly elastic • Firms can set their price, but within boundaries

Case 1: Perfect competition : Assumptions I

Homogeneous good: Consumers have no preference for the goods of one supplier over the goods of another supplier. The goods are identical.

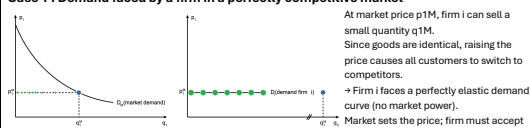
Case 1: Perfect competition : Assumptions II

Many customers: Each consumer has a negligible effect on the market as a whole

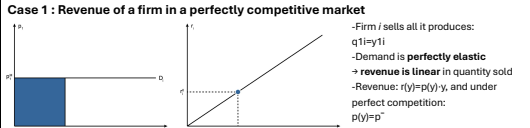
Many suppliers: Each supplier has a negligible effect on the market as a whole

Free market entry and market exit: Firms can enter and exit market at no cost

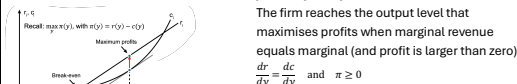
Case 1 : Demand faced by a firm in a perfectly competitive market



Case 1 : Revenue of a firm in a perfectly competitive market



Case 1 : Profit maximisation of a firm in a perfectly competitive market



Case 1: Decisions of a firm in a perfectly competitive market

Product is not differentiated, Set the **price** dictated by the market. **Place** is not differentiated, **Promotion** should only be used to the point where the firm sells the quantity that maximises profit (but not more than that).

Case 2: Monopolistic competition: Assumption I

Heterogeneous good: Firms' goods and services are differentiated, and consumers have certain preferences for the goods of one supplier over the goods of other suppliers.

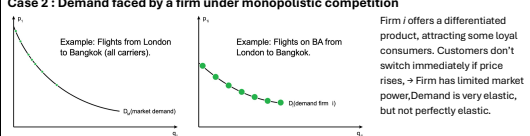
Case 2: Monopolistic competition: Assumption II

Many customers: Each consumer has a negligible effect on the market as a whole

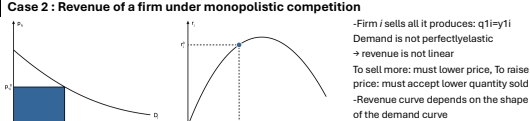
Many suppliers

Free market entry and market exit: Firms can enter and exit market at no cost

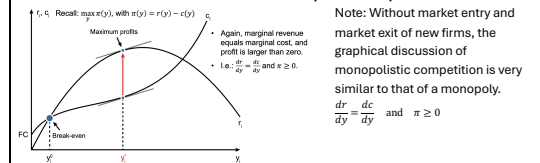
Case 2 : Demand faced by a firm under monopolistic competition



Case 2 : Revenue of a firm under monopolistic competition



Case 2 : Profit maximisation of a firm under monopolistic competition



Case 2 : Decision of a firm under monopolistic competition

- Use product, place & promotion to shift demand curve right (gain market share).
- Prevent leftward shift (loss to competitors).
- Set price & quantity to maximize profit based on own demand curve.

SW07 Marketing III

Forecasting Demand

Historical Data: Trends, cyclical fluctuation, seasonal fluctuation, stochastic fluctuations, Careful: Past time series patterns, relationships among variables and the importance of different determinants of demand may not hold in future.

Changes in the number of consumers

As consumers **leave the market**, the quantity of good 1 demanded decreases (and vice versa). This is true for all prices. Consequently, as consumers leave the market the demand curve shifts to the left (and vice versa).

Change in income I: The case of normal goods

As consumers' income **decreases**, the quantity of good 1 demanded decreases (and vice versa). This is true for all prices. Consequently, as consumers' income decreases the demand curve shifts to the left (and vice versa).

Change in income II: The case of inferior goods

As consumers' income **decreases**, the quantity of good 1 demanded increases (and vice versa). This is true for all prices. Consequently, as consumers' income decreases the demand curve shifts to the right (and vice versa).

Income elasticity of demand

$$\epsilon_l(p, I) = \frac{\partial q_l(p, I)}{\partial I} \cdot \frac{I}{q_l(p, I)} \quad \text{or in discrete terms:} \quad \epsilon_{ll}(p, I) = \frac{\frac{\Delta q_l(p, I)}{q_l(p, I)}}{\frac{\Delta I}{I}}$$

Normal good: $\epsilon_{ll} \geq 0$ Inferior good: $\epsilon_{ll} < 0$

Changes in the price of other goods I: The case of substitutes

As the price of good 1 **increases**, the quantity of good 2 demanded increases (and vice versa). This is true for all prices. Consequently, as the price of good 1 increases the demand curve for good 2 shifts to the right (and vice versa).

Changes in the price of other goods II: The case of complements

As the price of good 1 increases, the quantity of good 2 demanded decreases (and vice versa). This is true for all prices. Consequently, as the price of good 1 increases the demand curve for good 2 shifts to the left (and vice versa).

Cross-price elasticity of demand

$$\epsilon_{lk}(p, I) = \frac{\partial q_l(p, I)}{\partial p_k} \cdot \frac{p_k}{q_l(p, I)}, \text{ with } l \neq k \quad \text{or, in discrete terms:} \quad \epsilon_{lk}(p, I) = \frac{\frac{\Delta q_l(p, I)}{q_l(p, I)}}{\frac{\Delta p_k}{p_k}}, \text{ with } l \neq k$$

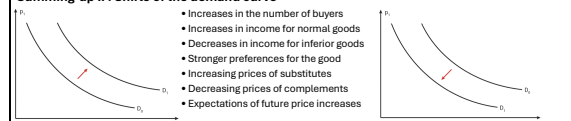
Substitutes: $\epsilon_{lk} > 0$ Complements: $\epsilon_{lk} < 0$

Summing-up I : Movements along the demand curve

increase of the price of good 1 decrease of the price of good 1



Summing-up II : Shifts of the demand curve



Summing-up III: Elasticities

Direct price elasticities: Measure the percentage change in quantity of good 1 (q_1) and the percentage change in the price of good 1 (p_1). Negative values.

Cross price elasticities: Measure the percentage change in quantity of good 2 (q_2) and the percentage change in the price of good 1 (p_1). Positive for substitutes, negative for complements.

Income elasticities: Measure the percentage change in quantity of good 1 (q_1) and the percentage change in the level of income (I). Positive for normal goods, negative for inferior goods.

Consequences for Individual Firms

Market demand and demand faced by an individual firm

Same logic applies to forecasting both market, firm level demand → Elasticities differ in value

Monopolistic competition: → Market demand shifts → firm demand shifts in same direction.

Perfect competition: → Challenge: How can a **horizontal** demand curve shift?

Perfect competition: Market supply

As the price of good 1 increases, the quantity of good 1 supplied increases (and vice versa). **Where does this price come from?**

Perfect competition: Derivation of market supply

Market supply = sum of all firms' supply (identical goods). Steps: **1.** Understand each firm's supply decision **2.** Add up all firms' supply (like with market demand)

Profit maximisation of an individual firm given perfect competition with varying market prices

A higher price implies a vertical upwards shift of the individual demand curve, and, hence, a «steeper»

revenue function (and vice versa).

Minimum Firm Size

Lowest price at which the firm is willing to produce a positive quantity.

The quantity y_i represents the minimum firm size.

If the price were even lower, the firm would always incur a loss, no matter how much it chose to produce (and sell).

Profit maximisation with varying output prices: Perfect competition

Key finding: The higher the output price, the higher the profit-maximising quantity of output.

Consequently, the supply curve of the individual firm slopes upwards.

Perfect competition: Market supply

Aggregating individual firms' supply over all firms in the market yields market supply.

Key finding: The higher the output price, the higher the quantity supplied by all firms in the market.

Perfect competition: Market equilibrium with a fixed number of firms

At a price of p_1 the market for good clears at a quantity of q_1 .

At this price the quantity demanded equals the quantity supplied.

Perfect competition:

Excess supply

Excess supply puts pressure on the price to fall.

Excess demand

Excess demand puts pressure on the price to rise.

Perfect competition: Market equilibrium with a fixed number of firms

At a price of p_1 the market for good clears at a quantity of q_1 . At this price the quantity demanded equals the quantity supplied. **That is where that price comes from!**

Pricing strategies : Overview

PRICING STRATEGIES

STATIC METHOD

DYNAMIC METHOD

PRICE DIFFERENTIATION

Pricing strategies I : Static concept

Basically, this is what we have considered up to now. However, price responds to:

1. Changes in demand,

2. Changes in cost, 3. Changes to competition.

Pricing strategies II : Dynamic concept

Penetration strategy

> Rapid market penetration of new products.

> Low initial prices deter competitors from entering the market. > Price increase may be associated with increases in quality.

Pricing strategies III: Price differentiation

Requirements for price differentiation (price discrimination)

1. Some market power (price setting power),

2. Information to separate the market

3. Prevent re-sale (arbitrage or market seepage)

Three types of price differentiation : First degree, Second degree, Third degree

First degree price discrimination

With first degree price differentiation, the firm charges every consumer his / her marginal willingness to pay.

• All consumer surplus is transferred into profits for the firm.

MC: Marginal cost.

Cost of producing the last unit, i.e. the first derivative of the cost function (assuming a linear cost function for ease of exposition here).

Third degree price discrimination: The most common form of price discrimination

the firm segments the market into ones with relatively high and ones with relatively low direct price elasticities of demand.

• Consumers in the markets with relatively high price elasticity (i.e. strongly negative) are charged relatively low prices.

• Consumers in the markets with relatively low price elasticity (i.e. slightly negative) are charged relatively high prices.

SW08 Transaction Cost

Characteristics of goods and services

Goods
Physical & storable, Transferable ownership, Independent of user, Tradeable & exchangeable, Support division of labour

Services
Intangible, Vary by customer/context (heterogeneous), Produced & consumed together (inseparable) Cannot be stored (perishable)

Transaction cost

Transaction costs are the cost of the exchange as such. Types of transaction cost:

Search and information costs: Costs associated with searching for an exchange partner, comparing prices, evaluating the quality of a good or service, etc.

Bargaining costs: Costs associated with coming to an agreement, designing contracts, etc.

Policing and enforcement costs: Costs associated with ensuring that the other party adheres to the terms of the contract, and taking appropriate action if this turns out not to be

Search goods

Goods with attributes that can be evaluated prior to purchase. Consumers can build on information from direct product inspection. Search goods are fairly easy to deal with. Consumers can evaluate the quality propagated in advertisements and catalogues with relative little effort, Examples: red apples, clothing, furniture, Easy to assess at low cost

Experience goods

Quality can only be judged after purchase/use, Examples: travel, meals, books, downloads, used cars. If quality isn't visible upfront, high-quality markets may collapse.

Signaling quality : Guarantee, Independent review/ratings, supplier reputation, ICT Impact : TripAdvisor, Booking.com...

Credence goods

Cannot be evaluated even after consumption, Consumers lack expertise or info is too costly, Examples: consulting, financial advice, vitamins, fair trade goods.

Signaling Quality : Expert reviews, labels, supplier reputation help

SW09 Market Failure and Regulation: Price Control and Externalities

The gains from trade

Consumers value the marginal unit at a quantity of q_1 at P_{1D} .

Think of this as the maximum of what they are willing to pay for that marginal unit, i.e. the marginal willingness to pay.

The additional cost of producing the marginal unit at a quantity of q_1 is P_{1S} .

This is the marginal cost

The gains from trading the marginal unit at q_1 is $P_{1D} - P_{1S}$.

The consumer gains $P_{1D} - p^*$. The supplier gains $p^* - P_{1S}$.

Consumer and Producer Surplus - The sum of the gains trade

Aggregate social welfare

When the (perfectly competitive) market is in equilibrium, the sum of consumer and producer surplus – i.e. social surplus – is maximised.

Put differently, the best conceivable outcome is at (q^*, p^*) . Put differently, at (q^*, p^*) resources are allocated efficiently.

Effect of price controls

Effects of a minimum price : Consumer and producer surplus

Unutilized social surplus.

A minimum price reduces social surplus.

Effects of a maximum price: Consumer and producer surplus

Unutilized social surplus.

A maximum price reduces social surplus.

Externalities effects

Definition: Effects from a transaction that impact third parties without compensation.

Types: Negative externality: Third party bears a cost (e.g. pollution). Positive externality: Third party receives a benefit (e.g. education, vaccination). **Key Issue:** External effects lead to market inefficiencies due to unaccounted costs or benefits.

External cost

An external cost is a negative side effect of an economic activity that affects third parties without being reflected in market prices. **Example:** Air pollution from a factory harms the health of nearby residents, but the factory does not pay for this damage.

External benefits

Aviation Industry : Plane-spotting

Private (marginal) cost, external (marginal) cost and social (marginal) cost

Social marginal cost (MC) are the sum of private MC and external MC.

While (q_{Social}, p_{Social}) would be the physical, the market equilibrium is still at (q_{Market}, p_{Market}) .

External costs lead to overconsumption

Efficient quantity

While (q_{Social}, p_{Social}) would be the physical, the market equilibrium is still at (q_{Market}, p_{Market}) .

Solution to externalities

Solutions to negative externalities I: (Pigouvian) Taxation

By imposing a tax $(-t)$ if private supply is shifted upwards to reflect social marginal cost.

Practical challenge: How high is the optimal tax $(-t)$? Key Problem: Quantification of external cost

Solutions to negative externalities II: (Pigouvian) Taxation

Which is the correct MC_{Social} ? $S = MC_{Private}$

By imposing a tax $(-t)$ if private supply is shifted upwards to reflect social marginal cost.

Practical challenge: How high is the optimal tax $(-t)$? Key Problem: Quantification of external cost

The burden of the externality tax is shared between consumers and producers, as is the burden of any tax. How much of the total burden each has to bear depends on the elasticities of supply and demand.

Who bears the tax burden?

p_{paid} : i.e., Paid by consumers. $p_{received}$: i.e., Received by producers.

Additional price paid by consumers

Price lost by producers

$q_{Market} = q_{Social}$

A more elastic demand results in less tax burden for consumers

A more inelastic supply results in more tax burden for producers

SW10 Financial Accounting

Overview of Accounting

Objective: Quantity (i.e. measure) and depict the effects of a firm's economic activity, i.e. collect, process, evaluate and communicate financial information.

Financial accounting: Targeted at internal and external stakeholders.

Cost accounting: Targeted only at internal stakeholders, i.e. for internal planning, and monitoring of value movements within the firm.

A (very important) note on measurement I

Different production factors like aircraft, pilots, and contracts can't be directly added together. Solution: Use a common unit, money, to measure and compare value, which is a core function of money.

A (very important) note on measurement II

Production factors are valued in money, which works well if market prices exist. But if no clear price is available (e.g. for older assets), estimates are imperfect—just like with GDP.

Balance sheet

Function

Description

Documentation

The balance sheet represents an inventory of the enterprise's existing assets and liabilities on a specific date.

Profit determination

The gain or loss during a particular period can be seen in the balance sheet.

Information

The balance sheet provides information internally (as a management tool for the company) and externally (e.g., investors, government, etc.) on the financial position of the enterprise.

Balance sheet : Assets

« How are the available funds used? How are the available funds deployed? »

Classification	Description	Typical accounts
Current assets	Allow for the execution of operations and can be liquidated within one year	– Liquid assets (cash, postal and bank credit) – Accounts receivable (credit to customers) , – Inventories
Fixed assets	Serve the company in the long term and not intended for short-term sale.	– Financial assets (stocks, bonds, etc.) – Mobile assets (machinery, equipment, vehicles) – Immobile assets (real estate)

Balance sheet : Equity and liabilities

« Where do the available funds originate from? »

Classification	Description	Typical accounts
Debt	Is limited and rescindable. The lender is not involved in the enterprise, has no say and is not liable. A distinction is made between the following: Short-term debt (up to 1 year), Long-term debt (> 1 year)	– Creditors (debts to suppliers) – Loans – Mortgage – Provisions
Equity	Equity is the debt of the enterprise to its owners. Amount of money that would be returned to a company's shareholders if all of the assets were liquidated and all of the company's debt was paid off.	– Capital (equity, share capital) – Reserves – Profit (retained earnings, annual earnings)

Internal and external balance sheets: Creation of hidden reserves, are created by :

Undervaluing assets (e.g. depreciating a vehicle below its real value)

Omitting assets (e.g. not recording donated equipment)

Overstating liabilities (e.g. setting provisions higher than needed).

These practices lower reported profits or asset values intentionally.

Income statement: Expenses and revenues

«What reasons are there for decreases/increase in value?»

Classification	Description	Typical accounts
Expenses	Expenses identify how an enterprise has spent a certain amount of money and how many assets were used.	– Cost of materials/cost of goods sold – Personnel expenses – Operating expenses (rental expenses,...)
Revenues	Revenues indicate how an enterprise has earned a certain amount and by how much assets have grown.	– Production revenue/retail revenue/service revenue – Other income

A note on depreciation

Reduction in value of an asset (current or fixed) due to ageing, wear, price drop, etc.

Types of depreciation: >>

Cash flow statement

Objective: Measure liquidity.

Reason: One of the most common causes of business failure is insufficient

liquidity. Cash flow: Changes to corporate cash holdings

Cash flow areas

Business

The cash flow in this area includes all liquidity-related revenues and expenses that are incurred during business activities. If revenues are higher than expenses, there is cash inflow. However, excess spending will lead to a cash drain or loss.

Investing

This area includes all changes in the money supply that arise as a result of investments. The purchase of fixed assets (investment) decreases cash holdings; the sale (disinvestment) of fixed assets increases cash.

The sale of assets is therefore an option when an enterprise needs cash.

Financing

An enterprise increases its cash holdings by taking on long-term debt or equity. This procedure is called financing. However, if debt or equity is paid back, liquid assets will shrink, a process called definancing.

SW11 Finance II

Accounting principles

Principle

Explanation

Completeness

The assets and profit situation of an enterprise can be judged by stakeholders only if all relevant facts are completely reflected in the annual financial statements.

Clarity and materiality

Insight into the financial situation of an enterprise must be guaranteed by clear and appropriate transparency in the balance sheet and income statement+ as well as the presentation of all material facts.

Caution

– A profit may only be declared as such in the accounts when something has in fact been sold (realization principle)

– appropriate transparency in the balance

– A loss, however, is to be considered as soon as expenses are apparent, even if they have not yet been incurred (prudence principle).

– the accounts when something has in fact

– When there are various ways goods could be valued, the lowest value must be recorded in the balance sheet (lowest value principle).

Continuation

Reporting is based on the assumption that business operations will continue and thus accounts for the assets as for going concern. With the cessation of business, a company is required to prepare a balance sheet at liquidation values

Consistency

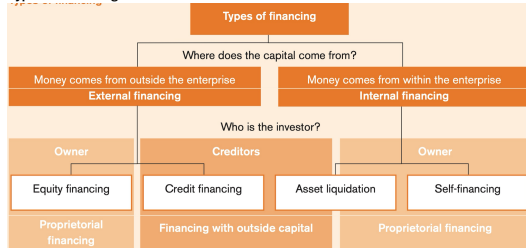
The financial statements comply with the principle of consistency when they are created using the same principles every year, in terms of design and assessment. This ensures that the figures can be compared with previous years.

Bar on offsets

Assets, liabilities, income, and expenses should not be offset against each other.

Accounting standards

Accounting standards (like IFRS and U.S. GAAP) ensure legal compliance, comparability, and reduce information asymmetry. Reliable accounting is essential—manipulated data leads to false conclusions.

Types of financing: Overview**Types of financing: Credit financing**

Forms of credit financing	Types of borrowed capital	Description
Bank overdraft	Short term	Covers shortfalls via overdrawing; ensures liquidity.
Bank credit/loan	Medium/long term	Longer-term credit with contract terms.
Mortgage loan	Long term	Loan secured by property as collateral
Bond	Long term	Debt security with interest payments; repaid by issuer at maturity.

Types of financing: Equity financing

Capital is raised through the sale of shares.

- The corporation only receives additional capital when new shares are issued.
- Likewise, capital is only reduced when the corporation buys back its own shares.
- Careful: The sale of existing shares on a secondary market does not impact the amount of capital available to the corporation.
- Shares are units of ownership interest in a corporation.
- Shares provide claims to profits in the form of dividends.
- (Common) Shares generally provide voting rights, according to the face value of the share.

Types of financing: Self-financing and asset liquidation**Self financing**

- Annual profits are not or only partially paid out to equity owners.
- This not distributed profit is allocated to equity on the balance sheet.
- Also referred to as “financing from retained earnings”

Asset liquidation

- Sale of existing assets.
- Asset liquidation cannot be clearly assigned to either equity or debt financing.

Types of financing: Criteria for the choice of financing type

Criterion	Proprietary capital – equity financing	Borrowed capital – debt financing
Autonom of managment	Co-owners have a say in management	No influence from lenders
Cost to the company	Profit-dependent, flexible	Fixed interest payments
Quantity available	Depends on owner's capacity	Limited by repayment ability and collateral
Duration of availability	Unlimited	Fixed term with repayment

Financial analysis - Magic triangle of financial analysis**Financial analysis: Liquidity ratios**

Liquidity ratio	General formula	Guide-line in %	Reason for guideline
Liquidity ratio I (cash ratio)	$\frac{\text{Cash and equivalents}}{\text{Short-term debt}} \cdot 100$	> 20	Too many liquid assets ¹ could mean better returns if invested, and lead to unnecessary capital costs.
Liquidity ratio II (quick ratio)	$\frac{\text{Cash} + \text{accounts receivable}}{\text{Short-term debt}} \cdot 100$	ca. 100	Liquid assets are available for the repayment of mature debt. The receipt of accounts receivable can be expected within 30 days.
Liquidity ratio III (current ratio)	$\frac{\text{Cash} + \text{accounts receivable} + \text{inventories}}{\text{Short-term debt}} \cdot 100$ $= \frac{\text{Current assets}}{\text{Short-term debt}} \cdot 100$	150–200	The sale of inventories is associated with greater uncertainties.

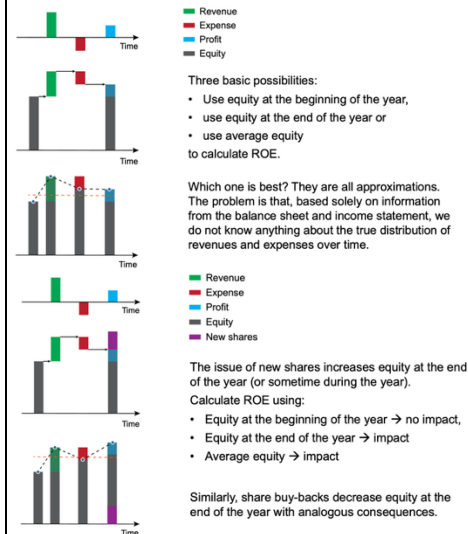
Cost and benefit of liquidity

Benefit: Ability to pay bills, flexibility. **Cost:** Opportunity cost of holding cash.

Target ratios, when applied blindly, can be dangerous.

Financial analysis: Profitability

Profitability	General formula	Guideline
Return on equity	$\frac{\text{Profit}}{\text{Equity}} \cdot 100$	8% or more, depending on and taking into account the risk
Return on assets	$\frac{\text{Profit} + \text{interest}}{\text{Debt} + \text{equity}} \cdot 100$	Typically lower than ROE. 6% or more
Return on sales (operating margin)	$\frac{\text{Profit}}{\text{Revenue}} \cdot 100$	Commercial: 2.5% or more Industrial: 1.5% or more
EBIT margin	$\frac{\text{EBIT}}{\text{Revenue}} \cdot 100$	Depends on the industry

Note : ROE and development of equity over time + ROE New shares**Financial analysis: Security**

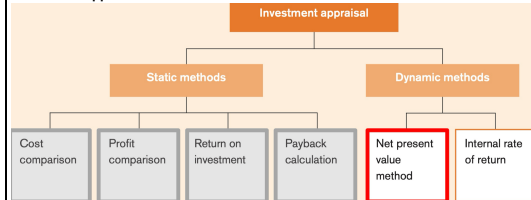
Ratio	General formula	Guideline
Equity ratio	$\frac{\text{Equity}}{\text{Total capital}} \cdot 100$	> 30%
Debt ratio	$\frac{\text{Debt}}{\text{Total capital}} \cdot 100$	< 70%
Debt-equity ratio	$\frac{\text{Debt}}{\text{Equity}} \cdot 100$	< 230%
Equity to asset ratio I	$\frac{\text{Equity}}{\text{Long-term assets}} \cdot 100$	90–120%
Equity to asset ratio II	$\frac{\text{Equity} + \text{long-term debt}}{\text{Long-term assets}} \cdot 100$	120–160%

Risk (Balance Sheet)

Firm C displays much more leverage than firm B. Its return on equity (ROE) might look very promising, but its capacity to bear risk is severely limited.

Lehman Brothers 2007

Large profits during the boom, High leverage: A 3% to 4% decline in asset value would eliminate the book value of equity, 2008: Large loss due to large positions in subprime and other lower-rated mortgage tranches - Largest bankruptcy filing in U.S. history!

SW12 Finance III: Investment Appraisal**Investment appraisal methods : Overview****An investment appraisal process should:**

Account for the time value of money, Account for risk, Focus on cash flow, Rank competing projects appropriately, Lead to investment decisions that maximize shareholders' wealth

Investment appraisal: 3 Basic Steps

- 1. Forecast** expected after-tax cash flows of the project.
- 2. Estimate** opportunity cost of capital (i.e. expected return from next-best investment).
- 3. Evaluate** using NPV, IRR, or Real Options methods.

Assets – Definition

An asset is a sequence of cash flow

$$\text{Asset}_{t=0} \equiv \{CF_t, CF_{t+1}, CF_{t+2}, \dots, CF_{t+n}\}$$

where CF_t is the Cash Flow at time t .

Note: CF_t can be larger or smaller than zero.

Assets – Valuation

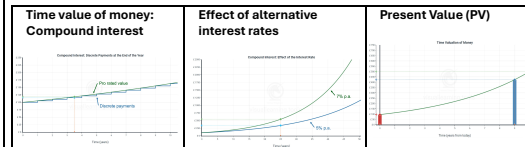
The valuation of an asset is the valuation of a sequence of cash flows.

$$\text{Value of Asset}_t \equiv V_t(CF_t, CF_{t+1}, CF_{t+2}, \dots, CF_{t+n})$$

where:

CF_t : Cash Flow at time t .

V_t : Present value operator for the valuation of the asset at time t .

**Net Present Value**

$$NPV = \sum_{t=0}^N \frac{CF_t}{(1+r)^t}$$

where:

- CF_t : Cash Flow at time t (the cash flow could be positive or negative at any time period).
- r : Discrete discount rate, i.e. the «opportunity cost of capital».
- N : Time at which the last cash flow occurs.

Decision rule:

- An investment should be accepted if the NPV is positive, and rejected otherwise.
- An investment with a higher NPV ranks higher than an investment with a lower NPV.

Application: Factors influencing the discount rate**• Time horizon :**

– In general (albeit not necessarily always so), the further into the future a cash flow occurs, the higher the discount rate.

– (This is analogous to the term structure of interest rates. In «normal times», the short-term interest rate is lower than the long-term interest rate).

• Expected inflation

– The higher the expected future inflation, the higher the discount rate.

• Risk of the cash flow

– The higher the risk of the cash flow, the higher the discount rate.

The Net Present Value (NPV) rule

1. Estimate future cash flows: How much? When?
2. Estimate discount rate
3. Estimate initial costs

Decision rule : Accept if $NPV > 0$

Ranking criteria: Choose the project with the highest NPV

Internal Rate of Return

The Internal Rate of Return (IRR) and NPV are closely related.

IRR is the discount rate that makes **NPV = 0**

$$NPV = \sum_{t=0}^N \frac{CF_t}{(1+r)^t} = 0$$

SW13 Market Equilibrium: The Short and Long Run**Perfect competition: Market equilibrium in the long run**

Key driver: If firms' profits are positive, market entry by new firms shifts the supply to the right (and vice versa).

- Hence, prices fall, and so do firms' profits.

- This process goes on until firms' profits have been completely eroded.

- In the long run then, firms' profits are zero.

Monopolistic competition : Market equilibrium in the long run (market entry)

Key driver: If profits are positive, new firms enter the market, demand for the good of the individual firm falls, and, hence so do profits (and vice versa).

This process goes on until firms' profits have been completely eroded.

In the long run then, firms' profits are zero

Reality check: General observations**Profit maximisation**

- While firms certainly do seek profits, they will hardly always actually produce at their profit-maximising output level. Nevertheless, they will seek to adapt towards that level.
- This also holds true for input choices and, hence, cost minimisation.

Free market entry and exit

- In general, market entry and exit are costly.
- Consequently, competition will be less fierce and some economic profits will remain.

Containing market entry: Entry cost

- Large economies of scale can limit the number of firms (→ natural monopoly).
- Better access to resources or cost advantages from experience.
- Protection via patents or proprietary tech.
- Favorable regulation and strong reputation.
- High switching costs create customer lock-in.

Containing market entry: Exit cost

- High investments in non-transferable, fixed assets.
- Contractual obligations with suppliers and customers.

Exit cost signal the willingness of the firm to remain in the market and to fight tough price wars. This signal is credible and hence deters other firms to enter the market.