Corporate Finance

Prof. Dr. Frank Andreas Schittenhelm

Introduction to Financial Accounting

Literature

Basic Literature

- **Anthony/Hawkins/Merchant**: *Accounting*, 11thed., McGraw-Hill

Additional Literature

- **Dyckman/Dukes/Davis**: *Intermediate Accounting*, 4thed., McGraw-Hill
- **Horngren/Harrison/Bamber**: *Accounting*, 5thed., Prentice Hall
- **Hoyle/Schaefer/Doupnik**: *Advanced Accounting*, 5thed., McGraw-Hill
- **Perks**: *Financial Accounting for Non-Specialists*, McGraw-Hill

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1. Introduction to Financial Accounting

Learning Target Financial Accounting

The learning target of this chapter is to understand

- ✓ **the content of financial statements,**
- ✓ **the concept of the „double entry system“,**
- ✓ **the impact of different costing methods,**
- ✓ **the concept of depreciation,**
- ✓ **measures used in financial analysis.**

1. Introduction to Financial Accounting

1.1. Introduction (2)

Goal:

- Corporations need to communicate their results.
- Business activity is recorded, summarized and analysed
- Within the company: accounting information provides means to control, evaluate and plan operations

Target groups:

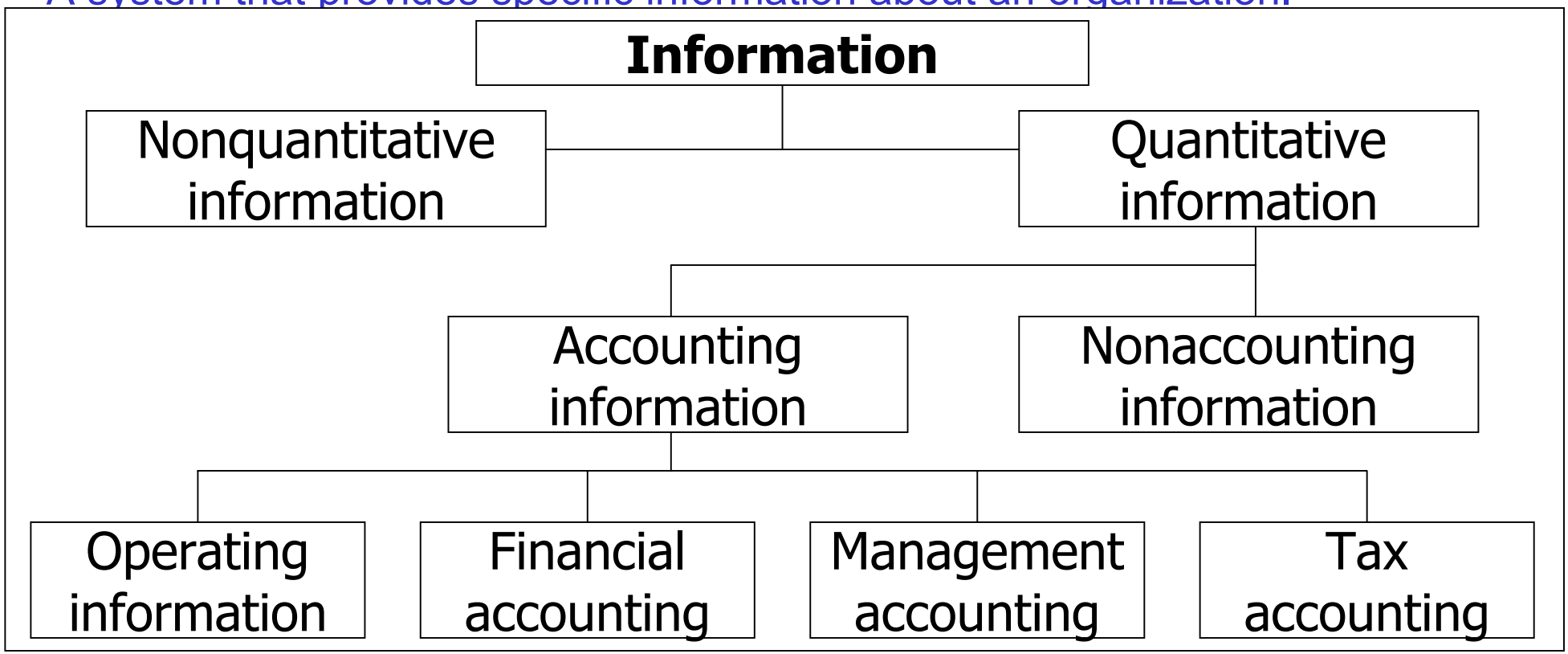
- Employees
- Investors
- Creditors
- Customers
- Suppliers
- Communities

1. Introduction to Financial Accounting

1.1. Introduction (3)

Accounting:

A system that provides specific information about an organization.



Source: Anthony et.al., „Accounting", McGraw-Hill, 2003, p.3

1. Introduction to Financial Accounting

1.1. Introduction (4)

Definition (from the American Accounting Association Committee):

Accounting is the process of identifying, measuring, and communicating economic information to permit informed judgements and decisions by users of the information.

Financial statements are the final product of the accounting process, they typically consist of
Balance Sheet, Income Statement, Cash Flow Statement

Profession of Accountants:

- Bookkeepers and other data-entry employees
- Staff accountants who decide how items should be reported, prepare the reports, interpret these reports, etc.
- Independent public accountants: Certified Public Accountants (CPAs), American Institute of Certified Public Accountants (AICPA)

1. Introduction to Financial Accounting

1.1. Introduction (5)

History:

Accounting has been around from the beginning of time:

- **In biblical times to keep track of how much grain was stored in the community‘s silos**
- **Luca Pacioli: Summa – Codification of the double entry bookkeeping 1494**
- **In modern times accounting answers basic questions about a business as:**
  - What does a company own?
  - How much does a company owe others?
  - How well did a company‘s operations perform?
  - How does the company get the cash to fund itself?

1. Introduction to Financial Accounting

1.1. Introduction (6)

Study Goals:

- Ability to ask for relevant accounting information
- Ability to use relevant accounting information
- **Not** to acquire expert knowledge of complex accounting rules

It is relevant

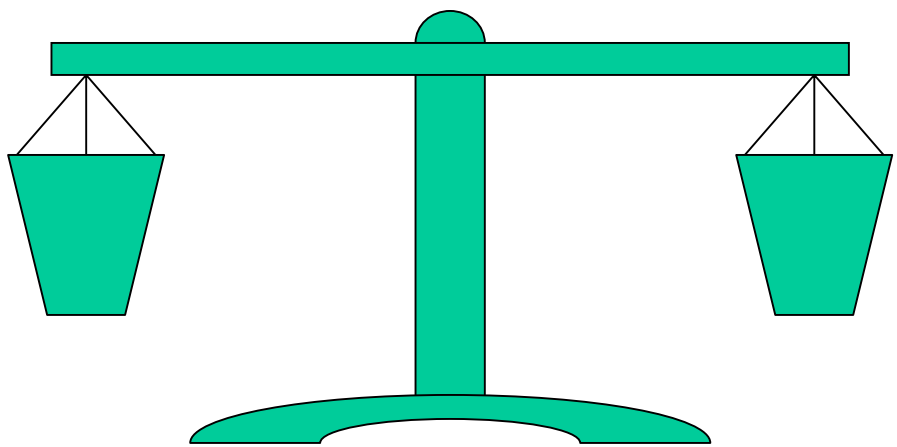
- for decision making
- in settlement negotiations
- if personal performance is evaluated with accounting data

Definition:

A Balance Sheet (formal: statement of financial position) reports the assets and equities (liabilities and owners' equity) of the entity (company) at a specific moment in time → status report

Fundamental Accounting Equation

Assets = Liabilities + Owner's Equity



Assets:

Assets are the resources that the company possess for the future benefit of the business

- Cash
- Marketable Securities
- Accounts Receivables
- Inventory
- Prepaid Expenses
- Land
- Equipment
- Buildings
- Investments
- Intangible Assets

Liabilities:

Liabilities are obligations to repay borrowing, debts, and other obligations to provide goods or services to others.

- Bank debt
- Amounts owed to suppliers: accounts payable
- Prepaid accounts or advances from customers to deliver goods and services
- Taxes owed
- Wages owed to employees

Owner's equity:

Owner's equity is the accumulated measure of the owners' investment in the company.

- Common stock
- Additional paid-in capital
- Retained earnings

The Balance Sheet is always in *balance*.

Four categories of accounting transactions affect the balance sheet

- Assets Exchange
  Example: Company buys a machine and pays in cash (price 1.000 €)
- Liabilities/Equity Exchange
  Example: Company takes loan to pay accounts payable
- Assets and Liabilities/Equity increase
  Example: Company buys a machine on credit (price 1.000 €)
- Assets and Liabilities/Equity decrease
  Example: Company pays back credit with cash (10.000 €)

1. Introduction to Financial Accounting

1.2.1. Accounting Transaction (2)

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Example: You decide to start your own business.

Starting Balance Sheet:

Assets	**01**	**02**
Cash	0	
Accounts receivable	0	
Inventory	0	
Net fixed assets	0	
Total assets	0	

Liabilities and Equity	**01**	**02**
Current liabilities	0	
Long-term debt	0	
Paid-in capital	0	
Retained earnings	0	
Total liabilities and equity	0	

Transactions:

- You start your own business by depositing 10.000 € in a bank account.
- You buy inventory for 2.000 € (term of credit: 3 month).
- You buy furniture for your office for 1.000 €.
- After 3 month: you pay for your inventory.

1. Introduction to Financial Accounting

1.2.1. Accounting Transaction (3)

Example: Balance Sheet Changes:

You start your own business by depositing 10.000 € in a bank account.

Assets	**01**	**02**
Cash	0	10.000
Accounts receivable	0	0
Inventory	0	0
Net fixed assets	0	0
Total assets	0	10.000

Liabilities and Equity	**01**	**02**
Current liabilities	0	0
Long-term debt	0	0
Paid-in capital	0	10.000
Retained earnings	0	0
Total liabilities and equity	0	10.000

You buy inventory for 2.000 € (term of credit: 3 month).

Assets	**01**	**02**
Cash	0	10.000
Accounts receivable	0	0
Inventory	0	2.000
Net fixed assets	0	0
Total assets	0	12.000

Liabilities and Equity	**01**	**02**
Current liabilities	0	2.000
Long-term debt	0	0
Paid-in capital	0	10.000
Retained earnings	0	0
Total liabilities and equity	0	12.000

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1.2.1. Accounting Transaction (4)

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Example: Balance Sheet Changes:

You buy furniture for your office for 1.000 €.

Assets	**01**	**02**
Cash	0	9.000
Accounts receivable	0	0
Inventory	0	2.000
Net fixed assets	0	1.000
Total assets	0	12.000

Liabilities and Equity	**01**	**02**
Current liabilities	0	2.000
Long-term debt	0	0
Paid-in capital	0	10.000
Retained earnings	0	0
Total liabilities and equity	0	12.000

After 3 month: you pay for your inventory

Assets	**01**	**02**
Cash	0	7.000
Accounts receivable	0	0
Inventory	0	2.000
Net fixed assets	0	1.000
Total assets	0	10.000

Liabilities and Equity	**01**	**02**
Current liabilities	0	0
Long-term debt	0	0
Paid-in capital	0	10.000
Retained earnings	0	0
Total liabilities and equity	0	10.000

1. Introduction to Financial Accounting

1.2.2. Exercise

Nonprofit Inc.:

You intend to open a bookstore.

Consider the following transactions one by one and show the respective effects of these transactions on the balance sheet.

- You start your own business by depositing 20.000 € in a bank account.
- In addition, you take out a loan from the bank (amount 14.000 €)
- You purchase a computer for 2.000 € on credit.
- You purchase merchandise (books) for 20.000 €.
- You pay back part of the loan (4.000 €).
- You sell books for 10.000 €.
- You purchase books for 6.000 € on credit.
- You pay back the credit for your computer.
- Has your business been successful?

1. Introduction to Financial Accounting

1.2.2. Exercise (2)

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Nonprofit Inc.:

You start your own business by depositing 20.000 € in a bank account.

Assets		**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**
Cash	0	20.000	34.000	34.000	14.000	10.000	20.000	20.000	18.000
Accounts Rec.	0	0	0	0	0	0	0	0	0
Inventory	0	0	0	0	20.000	20.000	10.000	16.000	16.000
Fixed Assets	0	0	0	2.000	2.000	2.000	2.000	2.000	2.000
Total Assets	0	20.000	34.000	36.000	36.000	32.000	32.000	38.000	36.000
Liabilities and Equity									
C/Liabilities	0	0	0	2.000	2.000	2.000	2.000	8.000	6.000
Long-term debt	0	0	14.000	14.000	14.000	10.000	10.000	10.000	10.000
Owners‘ equity	0	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
Ret. Earnings									
Total Liabilities and Equity	0	20.000	34.000	36.000	36.000	32.000	32.000	38.000	36.000

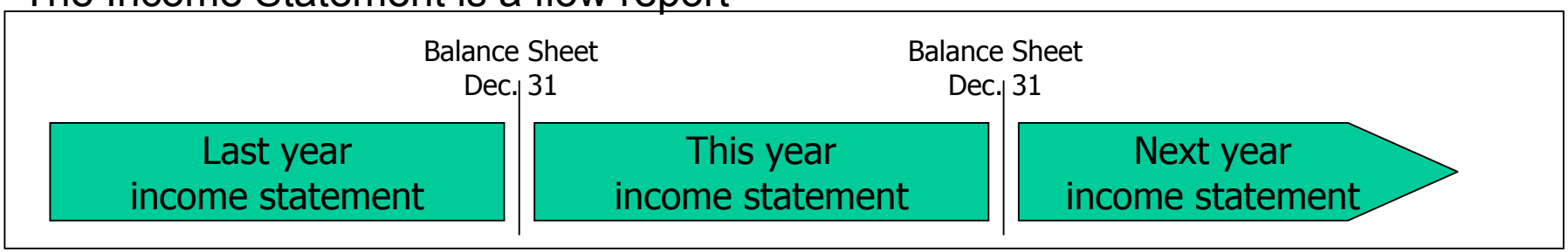
Definition:

An **Income Statement** (or: profit and loss statement) reports how profitable a company has been during a period. The income statement explains how this income was earned. It summarizes the revenues and the expenses.

The basic income statement equation is:

Revenues – Expenses = Net income

The Income Statement is a flow report



Source: Anthony et.al., „Accounting“, McGraw-Hill, 2003, p.54

Typical Income Statement:

Net Sales - Cost of Sales (Goods Sold)
= Gross Margin - Research and Development Expense - Selling, General, and Administrative Expenses
= Operating Income - Other Revenues (Expenses)
= Income (Profit) before Income Taxes - Provision for Income Tax (Tax Expenses)
= Net income - Dividends **= Retained Earnings**

Items of the Income Statement:

- Net Sales = Gross Sales – Returns and Allowances – Sales Discounts: Usually sales tax is not included
- Cost of Sales
- Gross Margin (or Gross Profit)
- Research and Development Expense, Selling, General, and Administrative Expenses: mainly fixed costs
- Other Revenues: Interest and dividends earned on marketable securities, royalties etc.
- Other Expenses: Interest
- Tax Expenses
- Net Income or Net Loss
- Earnings per Share of Common Stock (common in USA)
- Statement of Retained Earnings:
  Add: Net Income Deduct: Dividends

Accrual Accounting:

Accrual Accounting measures income for a period as the difference between the revenues recognized in that period and the expenses that are matched with those revenues.

Other Concepts of Income:

- **Cash-basis Accounting:** Sales and costs are not recorded until the period in which they received cash.
- **Modified Cash-basis Accounting:** Depreciation for long-lived assets
  - ➔ For smaller companies with rather no fixed assets
- **Income Tax Accounting:** general goal: reduce taxable income and/or postpone
  - ➔ tax payments

1. Introduction to Financial Accounting

1.3.1. Accounting Transaction

Example Company ABC Inc. made the following financial statements in 2001.

Assets	**2001**	**Liabilities and Equity**	**2001**
Cash	1000	Current liabilities	4000
Accounts receivable	1000	Long-term debt	4000
Inventory	1000	Common stock	4000
Net fixed assets	9000	Retained earnings	0
Total assets	12000	Total liabilities and equity	12000

Income statement	**2001**
Sales	8000
- Costs	- 7200
- Depreciation	- 0
= EBIT	800
- Interest paid	- 800
- Taxes	- 0
= Net income	0

What are the impacts of the following accounting transactions?

1. Introduction to Financial Accounting

1.3.1. Accounting Transaction (2)

Example: 1. Reimbursement of long-term debt (amount 500 €) with cash

Assets	2001	2002/1.
Cash	1000	500
Accounts receivable	1000	1000
Inventory	1000	1000
Net fixed assets	9000	9000
Total assets	12000	11500

Liabilities and Equity	2001	2002/1.
Current liabilities	4000	4000
Long-term debt	4000	3500
Common stock	4000	4000
Retained earnings	0	0
Total liabilities and equity	12000	11500

Income statement	2001	2002/1.
Sales	8000	8000
- Costs	- 7200	- 7200
- Depreciation	- 0	- 0
- Accruals	- 0	- 0
= EBIT	800	800
- Interest paid	- 800	- 800
- Taxes	- 0	- 0
= Net income	0	0

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1.3.1. Accounting Transaction (3)

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Example: 2. Additionally, buying inventory for 500 € (cash) selling it for 800 € (cash)

Assets	2002/1.	2002/2.
Cash	500	800
Accounts receivable	1000	1000
Inventory	1000	1000
Net fixed assets	9000	9000
Total assets	11500	11800

Liabilities and Equity	2002/1.	2002/2.
Current liabilities	4000	4000
Long-term debt	3500	3500
Common stock	4000	4000
Retained earnings	0	300
Total liabilities and equity	11500	11800

Income statement	2001	2002/1.	2002/2.
Sales	8000	8000	8800
- Costs	- 7200	- 7200	- 7700
- Depreciation	- 0	- 0	- 0
- Accruals	- 0	- 0	- 0
= EBIT	800	800	1100
- Interest paid	- 800	- 800	- 800
- Taxes	- 0	- 0	- 0
= Net income	0	0	300

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1.3.1. Accounting Transaction (4)

Example: 3. Additionally, depreciate net fixed assets by 200 €

Assets	2002/2.	2002/3.
Cash	800	800
Accounts receivable	1000	1000
Inventory	1000	1000
Net fixed assets	9000	8800
Total assets	11800	11600

Liabilities and Equity	2002/2.	2002/3.
Current liabilities	4000	4000
Long-term debt	3500	3500
Common stock	4000	4000
Retained earnings	300	100
Total liabilities and equity	11800	11600

Income statement	2001	2002/1.	2002/2.	2002/3.				
Sales	8000	8000	8800	8800				
- Costs	- 7200	- 7200	- 7700	- 7700				
- Depreciation	- 0	- 0	- 0	- 200				
- Accruals	- 0	- 0	- 0	- 0				
= EBIT	800	800	1100	900				
- Interest paid	- 800	- 800	- 800	- 800				
- Taxes	- 0	- 0	- 0	- 0				
= Net income	0	0	300	100				

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1.3.1. Accounting Transaction (5)

Example: 4. Additionally, suppose 800 € of the sales are on credit

Assets	2002/3.	2002/4.
Cash	800	0
Accounts receivable	1000	1800
Inventory	1000	1000
Net fixed assets	8800	8800
Total assets	11600	11600

Liabilities and Equity	2002/3.	2002/4.
Current liabilities	4000	4000
Long-term debt	3500	3500
Common stock	4000	4000
Retained earnings	100	100
Total liabilities and equity	11600	11600

Income statement	2001	2002/1.	2002/2.	2002/3.	2002/4.			
Sales	8000	8000	8800	8800	8800			
- Costs	- 7200	- 7200	- 7700	- 7700	- 7700			
- Depreciation	- 0	- 0	- 0	- 200	- 200			
- Accruals	- 0	- 0	- 0	- 0	- 0			
= EBIT	800	800	1100	900	900			
- Interest paid	- 800	- 800	- 800	- 800	- 800			
- Taxes	- 0	- 0	- 0	- 0	- 0			
= Net income	0	0	300	100	100			

1. Introduction to Financial Accounting

1.3.1. Accounting Transaction (6)

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Example: 5. Additionally, suppose 200 € of the inventory is on credit (by suppliers)

Assets	2002/4.	2002/5.
Cash	0	200
Accounts receivable	1800	1800
Inventory	1000	1000
Net fixed assets	8800	8800
Total assets	11600	11800

Liabilities and Equity	2002/4.	2002/5.
Current liabilities	4000	4200
Long-term debt	3500	3500
Common stock	4000	4000
Retained earnings	100	100
Total liabilities and equity	11600	11800

Income statement	2001	2002/1.	2002/2.	2002/3.	2002/4.	2002/5.		
Sales	8000	8000	8800	8800	8800	8800		
- Costs	- 7200	- 7200	- 7700	- 7700	- 7700	- 7700		
- Depreciation	- 0	- 0	- 0	- 200	- 200	- 200		
- Accruals	- 0	- 0	- 0	- 0	- 0	- 0		
= EBIT	800	800	1100	900	900	900		
- Interest paid	- 800	- 800	- 800	- 800	- 800	- 800		
- Taxes	- 0	- 0	- 0	- 0	- 0	- 0		
= Net income	0	0	300	100	100	100		

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1.3.1. Accounting Transaction (7)

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Example: 6. Additionally, suppose you must pay 50% taxes

Assets	2002/5.	2002/6.
Cash	200	150
Accounts receivable	1800	1800
Inventory	1000	1000
Net fixed assets	8800	8800
Total assets	11800	11750

Liabilities and Equity	2002/5.	2002/6.
Current liabilities	4200	4200
Long-term debt	3500	3500
Common stock	4000	4000
Retained earnings	100	50
Total liabilities and equity	11800	11750

Income statement	2001	2002/1.	2002/2.	2002/3.	2002/4.	2002/5.	2002/6.
Sales	8000	8000	8800	8800	8800	8800	8800
- Costs	- 7200	- 7200	- 7700	- 7700	- 7700	- 7700	- 7700
- Depreciation	- 0	- 0	- 0	- 200	- 200	- 200	- 200
- Accruals	- 0	- 0	- 0	- 0	- 0	- 0	- 0
= EBIT	800	800	1100	900	900	900	900
- Interest paid	- 800	- 800	- 800	- 800	- 800	- 800	- 800
- Taxes	- 0	- 0	- 0	- 0	- 0	- 0	- 50
= Net income	0	0	300	100	100	100	50

1. Introduction to Financial Accounting

1.3.1. Accounting Transaction (8)

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Example: 7. Additionally, suppose you set up accruals for 100 €

Assets	2002/6.	2002/7.
Cash	150	200
Accounts receivable	1800	1800
Inventory	1000	1000
Net fixed assets	8800	8800
Total assets	11750	11800

Liabilities and Equity	2002/6.	2002/7.
Current liabilities	4200	4200
Accruals		100
Long-term debt	3500	3500
Common stock	4000	4000
Retained earnings	50	0
Total liabilities and equity	11750	11800

Income statement	2001	2002/1.	2002/2.	2002/3.	2002/4.	2002/5.	2002/6.	2002/7.
Sales	8000	8000	8800	8800	8800	8800	8800	8800
- Costs	- 7200	- 7200	- 7700	- 7700	- 7700	- 7700	- 7700	- 7700
- Depreciation	- 0	- 0	- 0	- 200	- 200	- 200	- 200	- 200
- Accruals	- 0	- 0	- 0	- 0	- 0	- 0	- 0	- 100
= EBIT	800	800	1100	900	900	900	900	800
- Interest paid	- 800	- 800	- 800	- 800	- 800	- 800	- 800	- 800
- Taxes	- 0	- 0	- 0	- 0	- 0	- 0	- 50	0
= Net income	0	0	300	100	100	100	50	0

1. Introduction to Financial Accounting

1.3.1. Accounting Transaction (9)

What's really going on? Cash flows from operating activities!

Cash flows	CASH 2002	Income statement 2002
Sales	8000	8800
- Costs	- 7500	- 7700
- Depreciation		- 200
-/+ Accruals		- 100
= EBIT		800
- Interest paid	- 800	- 800
- Taxes		0
		net income 0
Cash flow	- 300	

Where are the missing 500 €?

Exercise

You own a small restaurant that made the following financial statement in year 01

The Balance Sheet for year 01 is:

Assets	**01**	**Liabilities and Equity**	**01**
Cash	10	Current liabilities	200
Marketable Securities	330	Long-term debt	400
Inventory	10	Paid-in Capital	100
Net fixed assets	470	Retained earnings	120
Total assets	820	Total liabilities and equity	820

1. Introduction to Financial Accounting

1.3.2. Exercise (2)

The Income Statement for year 01 is:

Income statement	01
Sales	+ 22.320
- Costs	- 4.800
- Wages	- 11.640
- Rent	- 5.240
- Advertising	- 60
- Depreciation Expenses	- 30
= EBIT	+ 550
+ Other Revenues	+ 20
- Interest paid	- 40
- Taxes (30%)	- 159
= Net income	+ 371
- Dividends	- 251
= Retained Earnings	+ 120

1. Introduction to Financial Accounting

1.3.2. Exercise (3)

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Assume the following transactions during the next period:

Current liabilities (accounts payable) are paid	200
You pay wages	12.170
You buy food, drinks for your restaurant	4.700
Part of the food is on credit	400
You buy new furniture for your restaurant	100
You give some old furniture away (book value 20)	0
You depreciate your fixed assets	40
You sell part of your market securities (shares: book value 200)	400
Revenues from your market securities	10
Your inventory remains unchanged	10
You pay for rent	5.240
For a new marketing strategy you pay	100
You sell food for	23.040
You decide to pay back long-term debt	100
Therefore, your interest payments are	30
You decide to add 40% of your net income to your retained earnings	

1. Introduction to Financial Accounting

1.3.2. Exercise (4)

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The Income Statement for year 02 is:

Income statement	02
Sales	+ 23.040
- Costs	- 4.700
- Wages	- 12.170
- Rent	- 5.240
- Advertising	- 100
- Depreciation Expenses	- 40
= EBIT	+ 790
+ Other Revenues	+ 210
- Other Expenses (furniture)	- 20
- Interest paid	- 30
- Taxes (30%)	- 285
= Net income	+ 665
- Dividends	- 399
= Retained Earnings	+ 266

The Balance Sheet for year 02 is:

Assets	**02**	**Liabilities and Equity**	**02**
Cash	536	Current liabilities	400
Marketable Securities	130	Long-term debt	300
Inventory	10	Paid-in Capital	100
Net fixed assets	510	Retained earnings	386
Total assets	1.186	Total liabilities and equity	1.186

- Accountants make journal entries to record each individual transaction.
- The accountants' books are called general ledger.

Rules for Entries into Accounts:

Asset Accounts

Debit	Credit
Increase	Decrease

Liability Accounts

Debit	Credit
Decrease	Increase

Equity Accounts

Debit	Credit
Decrease	Increase

Example:

A company issues own shares for 1.000.000 € in cash

Balance Sheet Journal Entry:

Account Title	Debit	Credit	Effect
Cash	1.000.000		Increase
Common Stock		1.000.000	Increase

A bank debt is repaid with cash 20.000 €

Account Title	Debit	Credit	Effect
Bank Debt	20.000		Decrease
Cash		20.000	Decrease

Example:

A company sells goods for 200.000 € in cash

Income Statement Journal Entry:

Account Title	Debit	Credit	Effect
Cash	200.000		Increase
Sales Revenue		200.000	Increase

The costs are recorded:

Account Title	Debit	Credit	Effect
Cost of Goods Sold	180.000		Decrease
Inventory		180.000	Decrease

Example:

Assume the two entries are the only income statement entries for the whole year.

Income Statement Year End Close Out Entry:

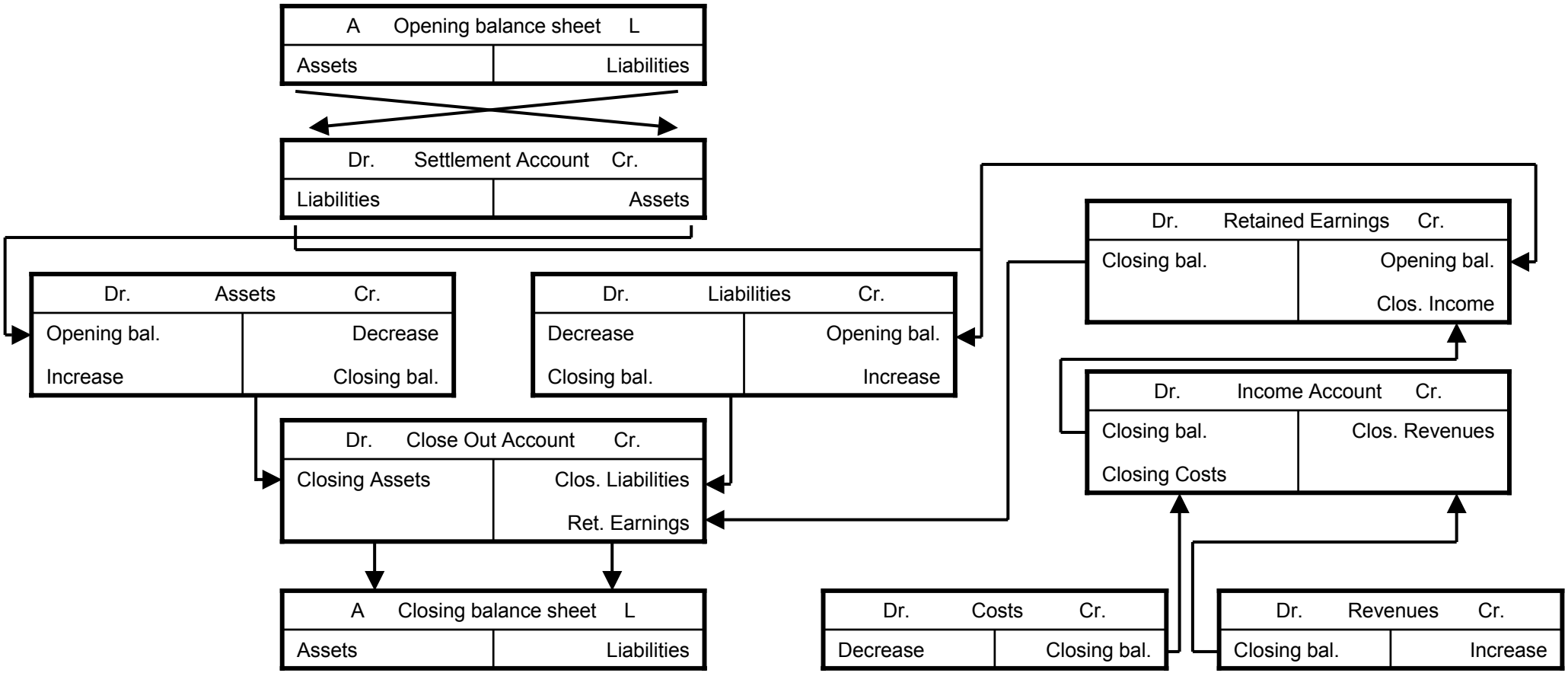
Account Title	Debit	Credit	Effect
Sales Revenue	200.000		Reversal
Income		200.000	Increase
Income	180.000		Decrease
Cost of Goods Sold		180.000	Reversal
Income	20.000		Reversal
Retained Earnings		20.000	Increase

Account Title	Debit	Credit	Effect
Retained Earnings	20.000		Reversal
Close Out Balance Sheet		20.000	Increase

1. Introduction to Financial Accounting

1.4. Double Entry System (5)

Put it all together:



Definition:

A **Cash Flow Statement** shows the net change in cash for the year.

- Was the company a seemingly profitable company, but must borrow heavily just to stay alive?
- Did the company's operations throw off cash, even though it may be just marginally profitable according to the income statement?
- What is relationship between cash flow and earnings?
- How are dividends financed?
- How are debts paid off?
- How is the cash generated by operations used
- Are management's stated financial policies reflected in the cash flow?

Types of business activities:

Operations Activities

- When the company is healthy, operating activities will generate cash

Investing Activities

- Does the company require a great investment in fixed assets?
- Is the company selling off its assets to fill an insatiable cash drain from operations?

Financing Activities

- Did the company borrow heavily?
- Has the company gone to investors to fund its operational or investing activities?

Rearranging the fundamental accounting equation one gets:

Cash+Other Current Assets+Fixed Assets = Current Liabilities + LT Debt + Equity

Cash **= Current Liabilities – Current Assets – Fixed Assets + LT Debt + Equity**

Operating activities

- + Net income
- +/– Increase/decrease in accruals, provisions
- + Depreciation
- +/– Any decrease/increase in current assets (except cash)
- +/– Increase/decrease in accounts payable

Investment activities

- + Ending fixed assets
- – Beginning fixed assets
- + Depreciation

Financing activities

- +/– Increase/decrease in notes payable
- +/– Increase/decrease in long-term debt
- + Increase in common stock
- – Dividends paid

Alternative ways to calculate cash flows from operating activities!

Cash flows	2002	2002
Sales	8000	8800
- Costs	- 7500	- 7700
- Depreciation		- 200
-/+ Accruals		- 100
= EBIT		800
- Interest paid	- 800	- 800
- Taxes		0
Net income		0
+/- Accruals		+ 100
+ Depreciation		+ 200
- increase current assets (except cash)		- 800
+ increase current liabilities		+ 200
Cash flow	- 300	- 300

1. Introduction to Financial Accounting

1.5.1. Accounting Transaction (3)

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Example what is the cash flow statement?

Assets	2001	2002
Cash	1000	200
Accounts receivable	1000	1800
Inventory	1000	1000
Net fixed assets	9000	8800
Total assets	12000	11800

Liabilities / Equity	2001	2002
Current liabilities	4000	4200
Accruals	0	100
Long-term debt	4000	3500
Common stock	4000	4000
Retained earnings	0	0
Total	12000	11800

Income statement	2001	2002
= Net income	0	0

Operating activities	2002
+ Net income	0
+ Depreciation	+ 200
+ Accruals	+ 100
- Increase C/A	- 800
+ Increase accounts p.	+ 200
Cash flow	- 300

Financing activities	2002
+ Increase notes payable	0
+ Increase long-term debt	- 500
+ Increase common stock	0
- Dividends	0
Cash flow	- 500

Investment activities	2002
+ Ending fixed assets	8800
- Beginning fixed assets	- 9000
+ Depreciation	+ 200
Cash flow	0

total cash flow =

- 300 + 0 - 500 = - 800 √

Example: Trading Company: Cheap Computers Start-up Inc.

Assume the following accounting transactions for one year:

Owners buy shares for	50.000 €
Company gets a credit from a bank (time to maturity 10 years)	30.000 €
Company pays wages over the year	20.000 €
Company pays for renting office space	12.000 €
Company buy furniture, equipment etc.	8.000 €
Company buys 200 computers (800 € per computer)	160.000 €
Company sells 180 computers (1.100 € per computer)	198.000 €
Company pays interest on liabilities (10% interest rate)	3.000 €
Suppliers grant credit	20.000 €
Company grants credit to customers	40.000 €
Company depreciates equipment	1.000 €
Tax rate is 30%	

Example: Trading Company: Cheap Computers Start-up Inc.

Income statement	**01**
Sales	+ 198.000
- Cost of goods sold	- 144.000
- Depreciation	- 1.000
- Wages	- 20.000
- Rent	- 12.000
= EBIT	+ 21.000
- Interest paid	- 3.000
= Taxable Earnings	+ 18.000
- Taxes	- 5.400
= Net income	+ 12.600

1. Introduction to Financial Accounting

1.5.1. Accounting Transaction (6)

Example: Trading Company: Cheap Computers Start-up Inc.

Balance Sheet 01			
Cash	49.600	Accounts payable	20.000
Accounts receivable	40.000	Notes payable	0
Inventory	16.000	Long term debt	30.000
Net fixed assets	7.000	Common stock	50.000
		Retained Earnings	12.600
Total assets	112.600	Total equity and liabilities	112.600

1. Introduction to Financial Accounting

1.5.1. Accounting Transaction (7)

Example: Trading Company: Cheap Computers Start-up Inc.

Operating activities	01
+ Net income	12.600
+ Depreciation	+ 1.000
- Increase C/A	- 56.000
+ Increase accounts payable	+ 20.000
Cash flow	- 22.400

Investment activities	01
+ Ending fixed assets	7.000
- Beginning fixed assets	- 0
+ Depreciation	+ 1.000
Cash flow	+ 8.000

Financing activities	01
+ Increase long-term debt	+ 30.000
+ Increase common stock	+ 50.000
Cash flow	+ 80.000

Trading Company: Expensive Computers Start-up Inc.

Assume the following accounting transactions for one year:

Owners buy shares for	40.000 €
Company gets a credit from a bank (time to maturity 6 years)	60.000 €
Company pays wages during the year	30.000 €
Company pays for renting office space	12.000 €
Company buy furniture, equipment etc.	20.000 €
Company buys 1.000 computers (800 € per computer)	800.000 €
Company sells 400 computers (1.500 € per computer)	600.000 €
Company pays interest on liabilities (10% interest rate)	6.000 €
Suppliers grant credit	80.000 €
Company grants credit to customers	120.000 €
Company depreciates equipment	2.000 €
Company sets up accruals for pensions	10.000 €
Tax rate is 30%	
Company pays dividends	40.000 €

1. Introduction to Financial Accounting

1.5.2. Exercise (2)

Trading Company: Expensive Computers Start-up Inc.

Income statement	01
Sales	+ 600.000
- Cost of goods sold	- 320.000
- Depreciation	- 2.000
- Wages	- 30.000
- Rent	- 12.000
- Accruals for pensions	- 10.000
= EBIT	+ 226.000
-Interest paid	- 6.000
= Taxable Earnings	+ 220.000
- Taxes	- 66.000
= Net income	+ 154.000
- Dividends	- 40.000
= Retained Earnings	+ 114.000

1. Introduction to Financial Accounting

1.5.2. Exercise (3)

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Trading Company: Expensive Computers Start-up Inc.

Balance Sheet 01			
Cash	0	Accounts payable	80.000
Accounts receivable	120.000	Notes payable	314.000
Inventory	480.000	Long term debt	60.000
Net fixed assets	18.000	Accruals for pensions	10.000
		Common stock	40.000
		Retained Earnings	114.000
Total assets	618.000	Total equity and liabilities	618.000

1. Introduction to Financial Accounting

1.5.2. Exercise (4)

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Trading Company: Expensive Computers Start-up Inc.

Operating activities	01
+ Net income	+ 154.000
+ Accruals	+ 10.000
+ Depreciation	+ 2.000
- Increase C/A	- 600.000
+ Increase accounts payable	+ 80.000
Cash flow	- 354.000

Investment activities	01
+ Ending fixed assets	+ 18.000
- Beginning fixed assets	- 0
+ Depreciation	+ 2.000
Cash flow	+ 20.000

Financing activities	01
+ Increase LTD, Notes payable	+374.000
+ Increase common stock	+ 40.000
- Dividends paid	- 40.000
Cash flow	+ 374.000

Total Cash Flow = - 354.000 - 20.000 + 374.000 = 0

1. Introduction to Financial Accounting

1.6. Inventory

Definition:

Goods owned by a business and held either for

- Use in the manufacture of products
- Products awaiting sale

Inventories are classified as

1. Merchandise inventory: goods purchased for resale
2. Manufacturing inventory
   - Raw materials: goods obtained for direct use in the manufacture
   - Work in progress: goods requiring further processing
   - Finished goods: manufactured items held for sale
   - Manufacturing supplies, e.g. cleaning materials
3. Miscellaneous inventory, e.g. office supplies

- Inventories are an important asset to most businesses.
- Inventories represent typically the largest current asset of manufacturing and retail companies

To consider:

- Adequate inventory levels are important to companies in assuring production schedules and meeting customer requirements
- Holding inventories at the same time is costly

➔ **just-in-time production**

Components of inventory cost

Inventory cost is measured by the total cash equivalent outlay made to acquire the goods and prepare them for sale:

- Purchase cost
- Incidental costs incurred until goods are ready for use or sale

Not allocated but reported as separate expenses:

- Insurance costs on goods in transit
- Sales taxes paid
- Material-handling expenses

Not allocated but reported as period expenses:

- General and administrative expenses
- Selling and distribution costs

General problem

- The unit cost of inventory often changes
- How can an accountant assign a cost to each item sold?

The four costing methods e.g. GAAP allows are:

1. Specific unit cost
2. Weighted-average cost
3. First-in, first-out (FIFO) cost
4. Last-in, first-out (LIFO) cost

Specific Unit Cost

Inventory cost method based on the specific cost of particular units of inventory.

Also called: *specific identification method*

Example:

A car dealer has two cars to sell; a model A that cost 10.000 € and a model B that cost 20.000 €.

Suppose the dealer sells model B for 22.000 €,

➔ so the cost of goods sold is 20.000 € and

➔ the remaining inventory, therefore, is 10.000 €.

Weighted-Average Cost

Inventory cost method based on the weighted-average cost of inventory during the period.

To determine the weighted-average cost one divides the cost of goods available for sale (beginning inventory plus purchases) by the number of units available.

Also called: *average-cost method*

Example:

Suppose:	Beginning inventory (30 units @ 10 € per unit)	300 €
	Purchase 1 (20 units @ 20 € per unit)	400 €
	Purchase 2 (10 units @ 30 € per unit)	300 €

➔ Cost of goods available for sale: 1.000 €; Number of units available: 60

➔ Average cost per unit: 16.67 €

First-In, First-Out (FIFO) Cost

Inventory costing method by which the first costs into inventory are the first costs out to cost of goods sold. Ending inventory is based on the costs of the most recent purchases.

Example:

Suppose:	Beginning inventory (30 units @ 10 € per unit)	300 €
	Purchase 1 (20 units @ 20 € per unit)	400 €
	Purchase 2 (10 units @ 30 € per unit)	300 €
	Ending inventory (20 units)	

➔ Ending inventory: 500 € (10 @ 30 € + 10 @ 20 €)

➔ Cost of goods sold : 500 € (30 @ 10 € + 10 @ 20 €)

Last-In, First-Out (LIFO) Cost

Inventory costing method by which the last costs into inventory are the first costs out to cost of goods sold. This method leaves the oldest costs in ending inventory.

Example:

Suppose:	Beginning inventory (30 units @ 10 € per unit)	300 €
	Purchase 1 (20 units @ 20 € per unit)	400 €
	Purchase 2 (10 units @ 30 € per unit)	300 €
	Ending inventory (20 units)	

➔ Ending inventory: 200 € (20 @ 10 €)

➔ Cost of goods sold : 800 € (10 @ 10 € + 20 @ 20 € + 10 @ 30 €)

Definition:

Plant assets are long-lived tangible assets used to operate a business. Plant assets are not held for sale.

Intangible assets are assets with no physical form. They are useful because of the special rights they carry.

Types of fixed assets are

- Plant assets:
  - Land
  - Buildings
  - Machinery and Equipment
- Intangible assets:
  - Patents, Copyrights, Trademarks
  - Goodwill

The cost principle directs a business to carry an asset on the balance sheet at its cost ➔ Cost of a plant asset = purchase price plus taxes, commission, ecc.

Terminology used in accounting for plant assets and intangibles:

Asset account on the Balance Sheet	**Related Expense Account on the Income Statement**
Plant Assets	
■ Land	None
■ Buildings, Equipment	Depreciation
■ Natural Resources	Depletion
Intangibles	Amortization

Definition

The allocation of a plant asset's cost to expense over the asset's useful life is called **depreciation**.

Concept explanation:

- Depreciation is not a process of valuation. Businesses do not record depreciation based on market (sales) value of their plant assets at the end of each year. Instead, businesses allocate an asset's cost to expense during the period of its use.
- Depreciation does not mean that the business sets aside cash to replace an assets when it is used up. Establishing a cash fund is entirely separate from depreciation, and depreciation does not represent cash

Causes of depreciation:

- Physical wear and tear
- Obsolescence

Measuring Depreciation

- Cost: a known amount
- Estimated useful life
  - Length of the service period expected from an asset. May be expressed in years, units of output, miles, or another measure
- Estimated residual value (scrap value or salvage value)
  - Expected cash value of an asset at the end of its useful life.
- Depreciable cost
  - The cost of a plant asset minus its estimated residual value.

Depreciation methods:

- Different methods allocate different amounts of depreciation to each period.
- However, they all result in the same total amount of depreciation over the life of the asset.

Depreciation Methods:

Straight line (SL)

An equal amount of depreciation is assigned to each year of asset use.

$$\text{SL depr. per year} = \frac{\text{Cost} - \text{Residual value}}{\text{Useful life, in years}}$$

Example

A truck is expected to be driven during its useful life of 4 years.

Therefore, the depreciation rate per year is ¼ or 0.25 per year.

The asset cost is 110.000 €, residual value is expected to be 10.000 €.

Year	Depreciation Rate	Depreciable Cost	Depreciation Expense	Accumulated Depreciation	Asset Book Value
1	0.25	100.000 €	25.000 €	25.000 €	85.000 €
2	0.25	100.000 €	25.000 €	50.000 €	60.000 €
3	0.25	100.000 €	25.000 €	75.000 €	35.000 €
4	0.25	100.000 €	25.000 €	100.000 €	10.000 €

Depreciation Methods:

Double-declining balance (DDB)

An accelerated depreciation method that multiplies the asset's decreasing book value by a constant percentage that is 2 times the SL depreciation rate.

$$\text{DDB depr. for the first year} = \text{Asset book value at the beginning of the year} \cdot \text{DDB rate}$$

Example

A truck is expected to be driven during its useful life of 4 years.

SL depreciation rate per year is ¼ or 0.25 per year ➔ DDB rate = 0.5

The asset cost is 110.000 €, residual value is expected to be 10.000 €.

Year	DDB Rate	Asset Book Value	Depreciation Expense	Accumulated Depreciation	Asset Book Value
1	0.5	110.000 €	55.000 €	55.000 €	55.000 €
2	0.5	55.000 €	27.500 €	82.500 €	27.500 €
3	0.5	27.500 €	13.750 €	96.250 €	13.750 €
4		13.750 €	3.750 €	100.000 €	10.000 €

Questions and Objectives:

- Is a company able to achieve its business objectives?
  - Create value for its shareholders / owners
  - Employee satisfaction, social responsibility etc.
- Information to assess a company's financial strength
- Information to assess a company's liquidity status
- Information to assess a company's profitability
- Information to assess a company's overall development
- Information to make comparison possible (often industry-specific)
- Etc.

Bases for Comparison:

Experience

- Subjective standards

Budgets

- Compare performance with prepared budgets
- BUT: budgeted amounts might not have been developed carefully
- BUT: budgets are based on assumptions that turned out to be incorrect

Historical Standards

- Continuous improvement hypothesis
- BUT: It only shows that a company did better or worse

External Benchmarks

- Compare company with others
- BUT: environmental and accounting differences
- BUT: different tax treatment

Balance Sheet Preparation:

Objective:

Aggregation of specific items of a balance sheet

Determination of percentage measures of total assets

Consideration of figures of the preceding year and annual absolute changes

Problems:

Maturity of liabilities → explanatory notes

Maturity of accruals → esp. for pensions generally not assessable

Use of net income

Differences in definition of items

	Item of Balance Sheet	Summarize to:
Fixed Assets	Intangible Assets	Fixed Assets
	Long-term tangible Assets	Fixed Assets
	Long-term Investments and Participations	Investments
Current Assets	Inventory	Inventory
	Accounts receivable	Accounts receivable
	Prepaid expenses	Accounts receivable
	Securities and Cash	Cash
Equity	Equity (all forms)	Equity
	Net income (depending on use)	Equity (retained earnings) or Current liabilities (dividend payment)
Long-term debt	Accruals for pensions	Long-term debt
	Bonds, Debt with time to maturity > 5 years	Long-term debt
Current Liabilities	Accruals (all except pensions)	Current Liabilities
	Debt (notes payable) with time to maturity <= 5 years	Current Liabilities
	Current maturities of long-term debt	Current Liabilities
	Accounts payable	Current Liabilities

Item	Year 01	Percentage	Year 02	Percentage	Absolute change
Fixed assets Investments Inventory Accounts receivable Cash					
Total assets		100%		100%	
Equity Long-term debt Current liabilities					
Total Liabilities and Equity		100%		100%	

General Information from a Balance Sheet:

- Assets: How did the company invest its capital?
- Liabilities and Equity: Where did the capital come from?

Forms of Balance Sheet Analysis:

- Capitalization Structure
- Asset Structure
- Fixed Asset Coverage
- Liquidity Analysis

Composition of Capital

- Shareholders bear company's financial risk
- Creditors expect interest payments and reimbursement

Objective:

- Solidity of Financing
- Creditworthiness

Assets	Liabilities
Current Assets	Current Liabilities
Fixed Assets	Long-term Debt
	Equity
Total Assets	Total Liabilities and Equity

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Total equity ratio =

$$\frac{\text{Equity}}{\text{Total liabilitie s and equity}} \cdot 100\%$$

- Financial independence
- Bosch Group World 1998: 33%

Total debt ratio (Leverage) =

$$\frac{\text{Total liabilitie s}}{\text{Total liabilitie s and equity}} \cdot 100\%$$

- Dependence on creditors and leverage
- Bosch Group World 1998: 67%

Long-term debt ratio =

$$\frac{\text{Long - term debt}}{\text{Total liabilitie s and equity}} \cdot 100\%$$

- Bosch Group World 1998: 2%

Current liabilities ratio =

$$\frac{\text{Current liabilitie s}}{\text{Total liabilitie s and equity}} \cdot 100\%$$

- Bosch Group World 1998: 45%

Composition of Assets

- Companies / Industries with high fixed asset ratio
  ➔ fixed costs (heavy industry, chemical industry, engine building industry)
- Companies / Industries with high current asset ratio
  ➔ variable costs (electrical industry, financial service provider)

Objective:

- Use of capital
- Flexibility of investments

Assets	Liabilities
Current Assets	Current Liabilities
Fixed Assets	Long-term Debt
	Equity
Total Assets	Total Liabilities and Equity

1. Introduction to Financial Accounting

1.8.2.2. Asset Structure (2)

(Fixed) asset intensity =

$$\frac{\text{Fixed Assets}}{\text{Total Assets}} \cdot 100\%$$

- Indicator for fixed costs
- Bosch Group World 1998: 35%

Current assets to total assets =

$$\frac{\text{Current Assets}}{\text{Total Assets}} \cdot 100\%$$

- Indicator for variable costs
- Bosch Group World 1998: 65%

Inventory intensity =

$$\frac{\text{Inventory}}{\text{Total Assets}} \cdot 100\%$$

Accounts receivable intensity =

$$\frac{\text{Accounts Receivable}}{\text{Total Assets}} \cdot 100\%$$

Cash intensity =

$$\frac{\text{Cash}}{\text{Total Assets}} \cdot 100\%$$

Coverage of fixed assets

- Coverage of fixed assets by equity
  → Fixed assets can't be claimed from creditors
- Solidity of liquidity

Objective:

- Financial stability of the company
- Maturity of fixed asset financing

Assets	Liabilities
	Current Liabilities
Current Assets	Long-term Debt
Fixed Assets	Equity
Total Assets	Total Liabilities and Equity

Equity to assets ratio I =

$$\frac{\text{Equity}}{\text{Fixed Assets}} \cdot 100\%$$

- Coverage with equity
- Bosch Group World 1998: 33%

Equity to assets ratio II =

$$\frac{\text{Equity + Long - term Debt}}{\text{Fixed Assets}} \cdot 100\%$$

- Coverage with long-term financing
- Bosch Group World 1998: 156%

Working Capital Management

- Short-term solvency
- Optimal allocation of short-term liabilities

Objective:

- Avoiding financial illiquidity
- Avoiding unnecessary long-term financing

Assets	Liabilities
	Current Liabilities
Current Assets	Long-term Debt
Fixed Assets	Equity
Total Assets	Total Liabilities and Equity

1. Introduction to Financial Accounting

1.8.2.4. Liquidity Analysis (2)

Cash ratio =

$$\frac{\text{Cash}}{\text{Current Li abilities}} \cdot 100\,\%$$

- Cash liquidity
- Bosch Group World 1998: 43%

Quick ratio (Acid test ratio) =

$$\frac{\text{Current Assets - Inventory}}{\text{Current Li abilities}} \cdot 100\,\%$$

- Bosch Group World 1998: 104%

Current ratio =

$$\frac{\text{Current Assets}}{\text{Current Li abilities}} \cdot 100\,\%$$

- Sales Liquidity
- Bosch Group World 1998: 143%

1. Introduction to Financial Accounting

1.8.3. Income Statement Analysis

General Information from an Income Statement:

- How did the company use its assets?
- How profitable did the capital work?

Forms of Income Statement Analysis:

- Asset Utilization or Turnover Ratios
- Profitability Ratios

Working Capital Management (Assets)

- capital turnover → capital lockup
  which capital investment is necessary to realize sales?
- Receivables turnover → Time for payment
  for how long does the company grant credit?
- Inventory turnover → Time of storage
  how long does the company hold inventory?

Objective:

- Reduction of capital lockup
- Reduction of time for payment
- Reduction of time of storage

  ➔ Increase flexibility of the company

Capital (Equity) turnover =

$$\frac{\text{Sales}}{\text{Equity}}$$

- Capital lockup = 360/capital turnover
- Bosch Group World 1998: 86 days

Receivables turnover =

$$\frac{\text{Sales}}{\text{Accounts Receivables}}$$

- Days sales outstanding = 360/receivables turnover
- Bosch Group World 1998: 57 days

Inventory turnover =

$$\frac{\text{Cost of goods sold}}{\text{Inventory}}$$

- Time of storage = 360/inventory turnover
- Bosch Group World 1998: 90 days

Net Income corrected

- Eliminate extraordinary Income
- Capital Ratios
- Sales Ratios

Objective:

- Maximize return on equity
- Causes of profitability

Return on equity (ROE) =

$$\frac{\text{Net Income}}{\text{Total Equity}} \cdot 100\%$$

- The higher, the better
- Bosch Group World 1998: 7.2%

Risk premium = Return on equity – market interest rate

Return on assets (ROA) =

$$\frac{\text{Net Income} + \text{Interest paid}}{\text{Total Assets}} \cdot 100\%$$

- Bosch Group World 1998: 3.1%

Profit margin (Return on sales) =

$$\frac{\text{Net Income}}{\text{Sales}} \cdot 100\%$$

- The higher, the better
- Bosch Group World 1998: 1.7%
- Average of German industrial companies: 2% (after tax)

General Information from an Cash Flow Statement:

- What are the financial means of a company to self-finance it?
- What is financial potential of the company for investments, debt redemption and paying dividends?

Forms of Cash Flow Statement Analysis:

- Cash flow
- Cash flow margin
- Dynamic gearing

1. Introduction to Financial Accounting

1.8.4. Cash Flow Statement Analysis (2)

Cash flow

- The higher, the better
- Bosch Group World 1998: 4,904 million DM

Cash flow margin =

$$\frac{\text{Cash Flow from operating activities}}{\text{Sales}} \cdot 100\%$$

- Percentage of Sales available for self-financing
- Bosch Group World 1998: 9,7%

Dynamic gearing =

$$\frac{\text{Total Debt}}{\text{Cash Flow}}$$

- How long would it take to pay back debt?
- Suggested value: 3 - 3,5