

Exercises Financial Accounting

I) Consider the following business case. Prepare the financial statements (balance sheet, income statement, cash flow statement) for the year 01.

You decide to open a beverage store selling 3 different kinds of water: sparkling water, medium and natural water.

- 01.01.01: You decide to open the store
- 06.01.01: You put 10.000 € of your own money on the company's bank account
- 11.01.01: You get a bank loan (time to maturity 10 years) of 30.000 €, interest rate is 8%.
- 13.01.01: You sign a rental agreement about a store (rental payments 600 € are due on the 15th of each month, starting 15.01.01, payment in advance)
- 15.01.01: You order furniture for the store (price 8.000 €)
- 22.01.01: You hire an employee for your store (monthly payment 900 € due on the 15th, starting 15.02.01, payment for the whole month)
- 29.01.01: Furniture is delivered, you pay directly and receive 5% discount.
You apply straight-line depreciation over 8 years.
- 01.02.01: Your employee starts working and buys the following quantity of goods:
- | | | |
|------------------|--------------------------------------|---------|
| sparkling water: | 8.000 bottles (bottle price 0,80 €) | 6.400 € |
| medium water: | 6.000 bottles (bottle price 0,75 €) | 4.500 € |
| natural water: | 10.000 bottles (bottle price 0,85 €) | 8.500 € |
- 05.02.01: For the opening of your store you give a big party. You spend 2.400 €
- 07.02.01: For advertising you spend 1.320 €
- 10.03.01: You buy marketable securities (shares) for 2.000 €
- 01.05.01: Your employee buys the following quantity of goods:
- | | | |
|------------------|--------------------------------------|---------|
| sparkling water: | 10.000 bottles (bottle price 0,80 €) | 8.000 € |
| medium water: | 5.000 bottles (bottle price 0,80 €) | 4.000 € |
| natural water: | 9.000 bottles (bottle price 0,80 €) | 7.200 € |
- 18.07.01: You sell marketable securities (shares) for 2.800 €
- 01.08.01: Your employee buys the following quantity of goods:
- | | | |
|------------------|--------------------------------------|---------|
| sparkling water: | 7.000 bottles (bottle price 0,80 €) | 5.600 € |
| medium water: | 6.000 bottles (bottle price 0,85 €) | 5.100 € |
| natural water: | 10.000 bottles (bottle price 0,80 €) | 8.000 € |
- 07.09.01: You feel that your business proceeds well, and you buy a used car for the company 12.000 € (DDB depreciation for 6 years)
- 01.11.01: Your employee buys the following quantity of goods:
- | | | |
|------------------|-------------------------------------|---------|
| sparkling water: | 9.000 bottles (bottle price 0,80 €) | 7.200 € |
| medium water: | 4.000 bottles (bottle price 0,85 €) | 3.400 € |
| natural water: | 8.000 bottles (bottle price 0,75 €) | 6.000 € |
- 31.12.01: You make an inventory und realise that you have the following quantity of bottles left on stock:
- | | |
|------------------|---------------|
| sparkling water: | 4.000 bottles |
| medium water: | 3.000 bottles |
| natural water: | 6.000 bottles |

Remarks:

- 1) The average price of your water sold was 1 € per bottle.
- 2) No tax payments have been made during the first year.

II) The following financial statements of Hairstylist Ltd. are given. The company is a specialized hairdresser with 10 branches. There are one managing director, 4 branch directors and 40 employees working for the company. The managing director owns 60% of the companies shares, 30% belongs to an external investor and the rest is owned by the 4 branch directors (2.5% each).

Consider the following transactions and prepare the financial statements (balance sheet, income statement, cash flow statement) for the year 02. The managing director asks you how much of the net income should be paid as dividends. What would you recommend? Explain your decision. How would the results change applying LIFO method?

Income Statement 01	
Revenues	2.320.000
Cost of Goods Sold (Cosmetics)	120.000
Administrative Costs (Salary management)	480.000
Pension payments (annuity insurance)	24.000
Wages (40 employees)	960.000
Advertising	80.000
Rent (incl. Water, gas etc.)	144.000
Depreciation SL 6 years (car)	10.000
Depreciation SL 10 years (equipment)	30.000
Accruals for reparation	30.000
Insurance	12.000
Other Revenues (from marketable sec.)	35.000
Other Expenses (9% of LTD)	45.000
Taxable Income	420.000
Taxes (25%)	105.000
Net income / loss	315.000
Retained earnings	65.000

Assets		Liabilities and Equity	
Cash	535.000	Wages payable	80.000
Marketable Securities	350.000	Taxes payable	20.000
Advanced payments	40.000	Accruals	30.000
Inventory (FIFO 4000 units @ 5)	20.000	Long-term debt	500.000
Equipment / Furniture	240.000	Equity	100.000
Car	50.000	Retained Earnings	190.000
		Net income 01	315.000
Total Assets	1.235.000	Total Liabilities and Equity	1.235.000

- 01.01.02: Salaries and wages are paid: 120.000 €.
- 04.01.02: 40.000 € are spent for advertising.
- 12.01.02: An additional employee is hired for one of the branches (monthly payment 2.000 € due at the beginning of the following month, employee starts working on 01.02.02).
- 31.01.02: In January inventory was bought for 10.000€ (2.000 units @ 5) and sold for 20.000€ (3.000 units).

- 01.02.02: Salaries and wages are paid: 120.000 €.
18.02.02: The company sells marketable securities for 200.000 € (book value 160.000 €).
28.02.02: The company signs a rental agreement for a new branch (rental payments (all incl.) 1.000 € are due on the 1st of each month, starting 1.04.02, payment in advance).
01.03.02: Salaries and wages are paid: 122.000 €.
14.03.02: The owners of the company agree on a total dividend payment of 250.000€ (compare income statement of 01)
24.03.02: Dividends are paid.
01.04.02: Salaries and wages are paid: 122.000 €.
02.04.02: For the opening of the new branch a big party is given. Expenses 30.000 €.
07.04.02: Remaining taxes for 01 (20.000€) are paid.
01.05.02: Salaries and wages are paid: 122.000 €.
31.05.02: From February 1st to May 31st inventory was bought for 50.000€ (12.500 units @ 4) and sold for 120.000€ (9.000 units).
14.05.02: Reparation expenses: 32.000€.
01.06.02: Salaries and wages are paid: 122.000 €.
30.06.02: In June inventory was bought for 10.000€ (2.000 units @ 5) and sold for 20.000€ (2.500 units).
30.06.02: The company reimburses a bank loan 200.000 €, (suppose: monthly interest rate was 9%/12).
01.07.02: Salaries and wages are paid: 122.000 €.
31.07.02: In July inventory was bought for 10.000€ (2.500 units @ 4) and sold for 20.000€ (2.500 units).
01.08.02: Salaries and wages are paid: 122.000 €.
04.08.02: 40.000 € are spent for advertising.
01.09.02: Salaries and wages are paid: 122.000 €.
01.09.02: Fees for the insurance contract are due (50% increase compared to 01). Advanced payment for one year: 18.000 €.
01.10.02: Salaries and wages are paid: 122.000 €.
03.10.02: New furniture is ordered (price 20.000 €).
17.10.02: The external investor sells his share (book value 30.000 €) of the company to the managing director. Price: 150.000€.
01.11.02: Salaries and wages are paid: 122.000 €.
17.11.02: Taxes for 02 are paid: 180.000€.
22.11.02: Furniture is delivered, the company decides to pay next year. Straight-line depreciation over 10 years is applied (full year in 02).
01.12.02: Salaries and wages are paid: 122.000 €.
31.12.02: From August 1st to December 31st inventory was bought for 80.000€ (16.000 units @ 5) and sold for 140.000€ (19.500 units).
31.12.02: The company makes an inventory und realise that part of the cosmetic goods has been stolen:
Inventory goods 2.000 units
01.01.03: Salaries and wages (for December 02) are paid: 122.000 €.

Remarks:

1. Revenues from haircutting in 02: 2.127.000€.
2. Salaries are paid in advance, wages at the 1st of next month.
3. No advanced payments for inventory is made in 02.
4. Revenues from marketable securities (not from trading): 28.000€.
5. All else is unchanged from year 01.

1) Small Corp. made the following financial statements for year 2000:

Income Statement	
Sales	12.000.000
- Costs	11.430.000
- Depreciation	200.000
= EBIT	370.000
- Interest payments	30.000
= Taxable Earnings	340.000
- Taxes (50%)	170.000
= Net income	170.000

Balance Sheet			
Inventory	1.200.000	Bank account	1.300.000
Accounts receivable	800.000	Credit	1.600.000
Net fixed assets	2.000.000	Long term debt	500.000
		Common stock	430.000
		Retained Earnings	170.000
Total assets	4.000.000	Total equity and liabilities	4.000.000

The company plans the following for the next year:

1. No change in number of sales
2. Cost increase: 80.000
3. Depreciation: 200.000
4. Reimbursement credit: 300.000

Prepare the pro-forma financial statements for next year. What are sources and uses of the cash-flows?

2) Different Corp. made the following financial statements for year 2000:

Income Statement	
Sales	20,000,000
- Costs	16,800,000
- Depreciation	700,000
= EBIT	2,500,000
- Interest payments	500,000
= Taxable Earnings	2,000,000
- Taxes (50%)	1,000,000
= Net income	1,000,000

Balance Sheet			
Cash	100,000	Bank account	100.000
Inventory	3.000.000	Accruals for Pensions	1.000.000
Accounts receivable	700.000	Long term debt	6,400.000
Net fixed assets	6.200.000	Common stock	1,500.000
		Retained Earnings	1,000,000
Total assets	10.000.000	Total equity and liabilities	10.000.000

The company plans the following for the next year:

1. No change in number of sales
2. Salary increase: 400,000
3. Cost decrease: 200,000
4. Depreciation: 200.000
5. Decrease of accruals for pensions: 200.000 (no payments!)
6. Additional long term credit: 600.000

Prepare the pro-forma financial statements for next year. What are sources and uses of the cash-flows?

3) SOS Corp. made the following financial statements for year 01:

Income Statement	
Sales	12.000.000
- Variable Costs	5.400.000
- Fixed Costs	2.000.000
- Depreciation	200.000
- Accruals	400.000
= EBIT	4.000.000
- Interest payments	200.000
= Taxable Earnings	3.800.000
- Taxes (50%)	1.900.000
= Net income	1.900.000

Balance Sheet			
Inventory	2.000.000	Bank account	2.100.000
Accounts receivable	1.000.000	Accounts payable	2.000.000
Net fixed assets	20.000.000	Accruals	1.000.000
		Long term debt	11.000.000
		Common stock	2.000.000
		Retained Earnings (accumulated)	3.000.000
		Net income 01	1.900.000
Total assets	23.000.000	Total equity and liabilities	23.000.000

The company plans the following for the next year:

1. Dividend payments for 01: 1.000.000
2. Increase in sales: 20%
3. Increase variable cost: 600.000
4. Fixed costs, depreciation, accruals, interest payments in income statement unchanged
5. Reimbursement long term debt: 2.000.000
6. Receivables turnover: 10
7. Increase inventory: 10%
8. Decrease Accounts payable: 400.000

Prepare the pro-forma financial statements (balance sheet, income statement, cash flow statement) for next year. What are sources and uses of the cash-flows? (20 points)

4) Mr. Müller acquires a new machine for 240.000 €. The useful life of the machine is 5 years, the annual cash flow is 60.000 € per year. Salvage value of the machine after 5 years is 30.000 €. Taxes are not considered.

Determine the NPV of the investment using the following discount rates 6%, 8%, 10%, 12% and 14%. What are your conclusions?

Which discount rate is the right one?

5) In order to calculate the IRR of exercise 1) we can use the following approximation formula:

$$r = i_1 - NPV_1 \cdot \frac{i_2 - i_1}{NPV_2 - NPV_1}, \text{ where } i \text{ are discount rates and } NPV \text{ are the NPV's for two}$$

different alternatives. Necessary conditions are: $i_1 < i_2$ and $NPV_1 > 0, NPV_2 < 0$

Calculate the IRR using the formula with the following discount rates:

- a) $i_1 = 6\%, i_2 = 14\%$
- b) $i_1 = 6\%, i_2 = 12\%$
- c) $i_1 = 10\%, i_2 = 12\%$

6) The Mayer GmbH considers two investment alternatives in €:

	Investment alternative 1:	Investment alternative 2:
Investment: t = 0	100.000	119.000
Cash Flow:		
t = 1:	60.000	60.000
t = 2:	30.000	40.000
t = 3:	20.000	20.000
t = 4:	15.000	20.000
t = 5:	0	10.000

Calculate the NPV of both alternatives with a discount rate of 8% and determine the IRR of the investment alternatives using the approximation formula (use 14% as a second discount rate).

How should Mayer GmbH decide?

7) Determine the NPV using the following discount rates $r = 10\%$ and $r = 5\%$ for the following cash flow stream (use the annuity present value formula):

(-10; -5; 1; 1; 2; 1; 1; 1; 1; 1; -3).

8) Calculate NPV, IRR and payback period for the following cash flow streams. Discount rate for NPV and payback period is 20%. Use Excel!

- (-400, -200, 50, 50, 50, 400)
- (-6.000, 1.000, 1.000, -200, 4.000, 4.000)
- (-20.000, 3.000, 4.000, 5.000, 6.000, 7.000)
- (-20, 3, 4, 5, 6, 7)

9) A business plan discusses two project alternatives. The respective cash flow streams are given as follows:

- Alternative 1: (-1.000; 1.150)
- Alternative 2: (-1.000; 1.100; 70)

The investment decision will be made based on the IRR of the project. Which alternative will be chosen (neither use Excel nor the approximation formula)?

10) A business plan discusses two project alternatives. The respective cash flow streams are given as follows:

- Alternative 1: (-1.000; 0; 1.150)
- Alternative 2: (-1.000; 1.000; 70)

The investment decision will be made based on the IRR of the project. Which alternative will be chosen (neither use Excel nor the approximation formula)?

11) CONFUSED Ltd. determines the following cash flow stream for a project:

(-1.000, 3.600, -4.310, 1.716)

Calculate the IRR using Excel. What's up with that exercise?

12) Calculate the NPV for the following cash flow streams for all discount rates from 0% to 50%. Then draw a graph showing the discount rate on the x-axes and NPV on the y-axes.

- (-1.000, 200, 400, 600, 800)
- (-5.000, 18.000, -21.550, 8.580)

13) Mr. Smart would like to invest 100.000 €. A bank offers Mr. Smart four investment alternatives. The respective cash flows are given as follows:

- i. (-100.000, 0, 21.980, 98.986)
- ii. (-100.000, 0, 68.235, 0, 52958)
- iii. (-100.000, 0, 68.000, 0, 53227)
- iv. (-100.000, 0, 68.500, 0, 52654)

Mr. Smart is going to use the NPV criteria. Which alternative will he never choose? Explain graphically? What is the current market interest rate?

14) The following cash flow stream is given

(-100, x, x, x, x, 100+x)

The NPV with a discount rate of 10% is -7,58.

Determine the IRR of the cash flow stream.

15) Calculate NPV and payback period for the following cash flow streams. Discount rate for NPV and payback period is 20%.

- (-400, 0, 0, 0, 0, 1.000)
- (-3.000, 1.100, 1.200, 1.300, 1.400)

16) The following project information is given (project time: 2 years):

- Sales in year 0: 0 €, in year 1 and 2: 1.000.000 €.
- Fix costs in year 0: 0 €, in year 1 and 2: 200.000 €.
- Variable costs in year 0: 0 €, in year 1 and 2: 300.000 €.
- Capital spending 600.000 €. Depreciation 60.000 € per year. Salvage value of fixed assets after 2 years: 400.000 €.
- Net working capital investment in year 0: 250.000 €.
- Tax rate: 25%.

Determine the relevant cash flow streams.

Calculate the NPV and IRR (discount rate for NPV: 15%).

17) Schmidt AG is proposing a rights offering. There are 1.000.000 shares outstanding at 100€ each. Book value of one share is 1€. There will be 250.000 shares offered at 70€ each.

- a) Calculate the ex-rights price, rights associated with one new share, value of a right.
- b) Mr. Mayer holds 50.000 shares. How much does he have to invest to keep his proportionate ownership?
- c) Mr Mayer decides to invest 1.000.000 € (apart from his rights). How many shares will he get?

18) Meier AG is proposing a rights offering. There are 10.000.000 shares outstanding. Current market price for one share is 20€. Book value of one share is 1€. There will be 1.000.000 shares offered at 22€ each.

- a) Calculate the ex-rights price, rights associated with one new share, value of a right.
- b) Explain the procedure of a rights offering! What will happen in the case of Meier AG?