Norwegian Business School

# EXC 2122
# FINANCIAL PERFORMANCE MANAGEMENT

## Spring semester 2020
## Study guide part one - Financial planning


DEPARTMENT OF ACCOUNTING AUDITING AND BUSINESS ANALYTICS

# Session no. 1 – Profits versus cash flows

**Study week no. 1:**
Course introduction video
Class Thursday January 9, 2020 14:00-16:45
Video: Accounting events and their effects on profits and cash flows

## 1.1 The income statement

The income statement (profit and loss or PNL in British terminology) gives us information about a company's:

- income (or often also referred to as revenues)
- costs
- and a corresponding profit or loss at *the bottom line*

for a given time period, for instance a month, a quarter or a year.

If the revenues exceed the cost, the company is making a profit, which (at least when it happens) is kept by the company. We therefore often call the accounting effect of a positive bottom line *the retained earnings* (more about these later).
If the costs exceed the revenues, the company has a loss that must be covered by the equity. If the equity is insufficient, the company's owners must decide whether to liquidate the company or invest more money in it.

An income statement is normally built around the following template:

Sales income (1)
+ Other income (2)
**= Total income**

- Cost of goods sold (3)
- Salaries and other personnel costs (4)
- Depreciation (5)
- Other operational costs (6)
**= Operating profits**

+ Financial revenues (7)
- Financial costs (8)
= Profits before taxes

Taxes (9)
**= Profits after taxes**

(1) The sales income includes all sales of goods and/or services that can be documented with a customer invoice.
(2) Other income can be a provision for income not yet invoiced customers, rent income, royalties or other revenues of a more extraordinary nature.
(3) Cost of goods sold (COGS) is only relevant for retailing companies, wholesalers (often also referred to as distributors) and manufacturing companies.

COGS for a given period is not necessarily the same as what we purchase in the same period:

- If we buy more than what we consume, our inventories in the same period will increase. This increase is not a cost, but an asset until these goods are used.
- If we buy less than what we consume, our inventories in the same period will decrease. We are then taking to cost the goods we purchased in an earlier period

(4) Salaries and other personnel costs includes fixed salary, variable salary, vacation pay (in Norway 12.0% of what you earned last year, to cover five weeks' paid vacation), employer's contribution to the social security system (in Norway 14.1% in the most densely populated areas). In addition, there can be other personnel costs, such as insurance, company events and training.

(5) Depreciation of fixed assets is the initial investment costs spread over the useful life of the assets, corrected for its scrap value at the end of the assets' life cycle.

(6) Typical other operational costs are: Rent, insurance, travel costs, costs for company cars, external services, office supplies and sales/marketing costs.

(7) Financial revenues include interest income, revenues from foreign currency gains and net profits from investments.

(8) Financial costs include interest costs, foreign currency losses and losses on investing activities.

(9) Taxes may consist of payable and deferred taxes. The deferred taxes are a part of the tax cost that is payable or refundable in the future.

### 1.2 Profit is not the same as cash flow

A company's cash flow can be split in:

- The incoming cash flow, money that is paid to the company's bank account
- The outgoing cash flow, money that leaves the company's bank account

And the *net cash flow* for a given period is therefore the difference between these two totals and it can therefore be either a positive or a negative figure. When the net cash flow is positive, the company has more money on the bank account at the end of the period.
If a company reported a profit of 1 million NOK in 2019, it does not mean that the company necessarily has a million more on the bank account on December 31, compared to January 1!

The cash flow is only equal to the profit or loss *if all the below ten conditions are met* (which of course is unrealistic!):

1. All customers pay cash when they buy goods or services from the company
2. All suppliers are paid cash when the company buys something
3. The company is not subject to Value Added Tax (VAT) – more about this later!
4. The company has no debts or claims
5. There are no investments
6. There is no depreciation on the company's fixed assets
7. There are no changes in inventory levels
8. There are no costs that are split between several accounting periods
9. There are no transactions between the company and its owners
10. The company has no tax costs

Hence, a company can report a profit and still be challenged by a negative cash flow and vice versa; a company can have a negative or weak profit but report a sufficient cash flow (for instance because of borrowings and/or emissions of new shares).

## 1.3 The Balance Sheet

After the accounting period is ended, we make up status:

- What are the company's assets and what are they worth?
- What are the company's liabilities?
- Does the value of the assets exceed the value of the liabilities? If so, the company has a positive equity.

The balance sheet is therefore a presentation of the company's assets, liabilities and equity at a given point of time, for instance December 31, 2019 at 24:00 hrs.
A balance sheet is normally built around the following template:

| | |
|---|---|
| **Asset side** | |
| Fixed assets | Acquired goodwill and other intangible assets |
| | Buildings |
| | Machinery, equipment and fixtures |
| | Company cars |
| | Long-term investments and claims |
| Current assets | Inventory |
| | Accounts Receivable (1) |
| | Short-term investments and claims (2) |
| | Bank deposits |
| **Equity and liability side** | |
| Equity | Share capital (3) |
| | Retained earnings (4) |
| Liabilities | Mortgage loans |
| | Other long-term liabilities |
| | Accounts Payable (5) |
| | Payable taxes |
| | Other short-term liabilities (6) |

(1) Accounts Receivable (often "Trade Debtors" in British terminology) consist of all unpaid customer invoices. A/R is therefore only relevant for customers that purchase goods and services against credit.

(2) Short-term investments are the investments that quickly can be converted to cash, such as investments in companies whose shares are traded on a stock exchange. Short-term claims are normally due for payment within a year.

(3) Share capital consists of the number of shares emitted * nominal value. If investors have paid more than nominal value (for instance NOK 1 500 per share that has a nominal value of NOK 1 000), the difference is a premium fund.

(4) Retained earnings is accumulated profit or loss after corporate taxes and dividend to share holders

(5) Accounts Payable (often "Trade Creditors" in British terminology) consist of all unpaid supplier invoices. A/P is therefore only relevant for suppliers that sell goods and services against credit.

(6) Short-term liabilities are normally due for payment within a year.

## 1.4 The Balance Sheet equations

The asset side of the balance sheet is often also referred to as the *debit side* (what the company owns), while the equity and liability side is often referred to as the *credit side* (what the company owes its owners and creditors).
These two sides shall always balance perfectly, which is shown in the three balance sheet equations:

Assets = Liabilities + Equity
Equity = Assets - Liabilities
Liabilities = Assets - Equity

## 1.5 Bookkeeping entries and financial reports

The various activities that take place in a company also create accounting events, such as:

- We sell something, so we need to register the sales income
- We buy something, so we need to register the corresponding cost
- We have people employed and sometimes they want to get paid for what they do
- The customers pay us and we pay our suppliers

These accounting events need to be registered in a structured way, so we can trace all transactions from the event to the final reporting, and back again. A part of this structure is the chart of accounts that consists of the various accounts used in the daily bookkeeping. Many countries have made their own standards for the chart of accounts, to make it easier both for accountants, auditors and the authorities to understand the various transactions and their accounting effects. With a standardized chart of account structure, similar transactions are booked in a similar way in companies in different industries and of different size and complexity.

The Norwegian standard is based on one of the EU standards, and the basic structure is as follows:

| | |
|---|---|
| 1000-1399 | Fixed assets |
| 1400-1999 | Current assets |
| 2000-2099 | Equity |
| 2100-2299 | Long-term debts and liabilities |
| 2300-2999 | Short-term debts and liabilities |
| 3000-3999 | Revenues |
| 4000-4999 | Cost of goods sold |
| 5000-5999 | Salaries and other personnel costs |
| 6000-6099 | Depreciation |
| 6100-7999 | Other operating expenses |
| 8000-8199 | Financial revenues and costs |

We see here that account nos. 1000-1999 cover the debit side of the balance sheet, the accounts nos. 2000-2999 the credit side, and the rest (3000 to 8199) are income statement accounts.

When an accounting event happens, this will have an effect on the balance of *at least two accounts*, due to the generally accepted double entry method of bookkeeping. Here are two examples:

- When a company sells a service to somebody who is granted a credit and therefore receives an invoice that is due for payment later, we must both register the increase in sales income and the increase in Accounts Receivable.
- When a retailing or wholesaling company purchases goods intended for resale, we must both register the increase in inventory (or alternatively cost of goods sold if these goods are distributed directly to the customer), as well as the increase in Accounts Payable.

We can pull out various reports from the accounting that may give us relevant information about the financial implications, such as:
- The income statement, which sums up all income statement accounts from a given period, for instance the accounts from no. 3000 to 8199 from January 1, 2019 to March 31, 2019
- The balance sheet, summing up all balances on accounts nos. 1000 to 2999 on March 31, 2019
- An account statement, for instance presenting all movements on the account no. 6300 Office rent from January 1 to March 31, 2019

It is important to understand the following:
- An income statement account starts with a zero balance in the beginning of the accounting year and the balance will gradually increase during the year as transactions are booked onto this.
- A balance sheet account will carry its balance from one year to another; the closing balance December 31, 2019 will equal the opening balance January 1, 2020.
- If the company has a profit, this will be distributed against the two balance sheet accounts retained earnings and payable taxes. If the company experiences a loss, this will reduce the balance of the retained earnings or if there are no previous earnings to offset the loss against, the company will end up with a loss carried forward.

## 1.6 The Value Added Tax and its accounting effects

The Value Added Tax (VAT) system is a way to tax private consumption of goods and services, which currently is employed by 193 countries in the world, including all EU and OECD countries, except USA. In some countries, such as France, VAT is the major source of government revenue.

The VAT system is based on the following structure:
- It is mandatory for a company to register for VAT, which entails the obligation to charge VAT to the customers when sales of goods and/or services are registered. We call this *output VAT*; the VAT that is a part of an outgoing invoice or sales receipt.
- The VAT registration also entails the right to deduct VAT on purchases and investments. We call this *input VAT*; the VAT that is a part of an incoming invoice or sales receipt.
- When the company reports VAT to the tax authorities it is the *difference* between the output and the input tax that is payable and the tax will therefore be calculated on the basis on the net value creation that takes place in the company.
- If the company engages in investment activities and/or increases the level of inventory significantly, the input VAT may exceed the output and the company will have VAT claim against the authorities
- Because it is only VAT registered companies that are entitled to a deduction of input VAT, the VAT becomes a tax on private consumption.

It is important to understand the VAT is not a cost and that VAT is not a part of the income statement and its corresponding accounts:
- The revenues and costs are shown in the income statement as net amounts, ex VAT
- The VAT balance is shown as a short-term liability in the balance sheet

- This means that the input and output VAT is booked on two balance sheet accounts and the net balance is cleared each time VAT is reported and paid.

The VAT regulations may differ between the 193 countries that employ the tax model:

- In the EU the general VAT rates differ from 17% (Luxembourg) to 27% (Hungary)
- VAT is paid monthly, bi-monthly (as in Norway) or quarterly
- Many countries have a differentiated VAT rate system; in Norway we have a general VAT rate of 25%, but there is only 15% VAT on groceries and 12% on public transportation.
- In most countries the VAT is calculated on the basis of invoice dates, rather than payment dates, which means that if a company issues an invoice in January, which is not paid before April, it should be reported and paid in the VAT term for January, not in April. On the other side, the customer (if VAT registered) will deduct the VAT before they actually pay the amount.
- In many countries not all input VAT is deductible, because they may have an element of private consumption such as for instance the private use of company cars or canteen costs.

## 1.7 17 common events and their corresponding accounting effects

In general, we can assume with a high degree of probability that as many as 99% of the accounting transactions in a company fall into 17 different categories, described below.
If we understand how these transactions influence (or not influence) the income statement, the balance sheet and our cash flow, we have a basic understanding of the accounting mechanisms.
Let us first take a look at the 15 first common events:

| No. | The event | First accounting transaction | Second accounting transaction | Income effect? | Cash flow effect? |
|---|---|---|---|---|---|
| 1 | We sell goods or services against credit | Income statement<br>Sales income + | Balance sheet<br>A/R + | Yes<br>Positive | No |
| 2 | We sell goods or services against cash payment | Income statement<br>Sales income + | Balance sheet<br>Bank deposits + | Yes<br>Positive | Yes<br>Positive |
| 3 | We purchase goods for immediately resale | Income statement<br>COGS + | Balance sheet<br>A/P + | Yes<br>Negative | No |
| 4 | We purchase goods for our own inventory | Balance sheet<br>Inventory + | Balance sheet<br>A/P + | No | No |
| 5 | A customer who we have given credit pays us | Balance sheet<br>Bank deposits + | Balance sheet<br>A/R - | No | Yes<br>Positive |
| 6 | We pay a supplier who has given us credit | Balance sheet<br>Bank deposits - | Balance sheet<br>A/P - | No | Yes<br>Negative |
| 7 | We increase our operating expenses | Income statement<br>Operating costs + | Balance sheet<br>A/P + | Yes<br>Negative | No |
| 8 | We invest in a company car, paid by VISA | Balance sheet<br>Company cars + | Balance sheet<br>Bank deposits - | No | Yes<br>Negative |
| 9 | We depreciate this car over 10 years | Income statement<br>Depreciation - | Balance sheet<br>Company cars - | Yes<br>Negative | No |
| 10 | We buy shares in a company, stock exchange | Balance sheet<br>Short-term inv. + | Balance sheet<br>Bank deposits - | No | Yes<br>Negative |
| 11 | We get a new mortgage loan from our bank | Balance sheet<br>Long-term debts + | Balance sheet<br>Bank deposits + | No | Yes<br>Positive |
| 12 | We pay an installment on our mortgage loans | Balance sheet<br>Long-term debts - | Balance sheet<br>Bank deposits - | No | Yes<br>Negative |
| 13 | We pay interest on our mortgage loans | Income statement<br>Financial costs + | Balance sheet<br>Bank deposits - | Yes<br>Negative | Yes<br>Negative |
| 14 | We emit new shares | Balance sheet<br>Share capital + | Balance sheet<br>Bank deposits + | No | Yes<br>Positive |
| 15 | We pay dividend to shareholders | Balance sheet<br>Short term debts - | Balance sheet<br>Bank deposits - | No | Yes<br>Negative |

In addition, there are two types of events that create a more complex pattern of transactions:

16. We pay salaries to our employees

The routine in this area is influenced by national legislation and how the tax and social security system works, from country to country. In most countries the employer is obliged to pay withheld tax on behalf of its employees and many countries have a social security system that is funded both by contribution from employers and employees.

In Norway, the employers have to follow this routine when they do the monthly payroll:

- The employees' gross salaries are a cost
- The net salaries are a short-term liability until this is transferred by the bank
- The employees' withheld tax (which can be anything from 0 to 46%) is a short-term liability and is paid bi-monthly. In Norway it is mandatory to keep the withheld tax on a separate bank account, which can only be used for payments to the tax authorities. This reduces the risk for the employers to use the employers' taxes for own expenses.
- The employer makes an accrual for 12.0% holiday pay to cover for five weeks' paid vacation (the legal minimum is four weeks and one day). This is a cost and a short-term liability until the holiday pay is paid, normally in June. The amount paid in June 2020 equals 12.0% of what is earned in 2019.
- The employer's contribution to the social security system depends on where in Norway the work is carried out; there are five tax brackets from 0% to 14.1%. In Oslo and other densely populated areas employers pay 14.1%, while in the northernmost parts of Norway the social security costs are fully subsidized.
- On top of that the companies accrue for social security on the holiday pay, which is taken to cost before the actual payment is done.
- In addition, there might be taxable benefits that should reported together with the salaries (free company car, free telephone et cetera). Norwegian employers are also obliged to pay 2.0% additional pension insurance to a private insurance company.

An example: A company in Oslo has a monthly salary cost of NOK 1 000 000 and the employees pay on average 30% withheld tax.
The monthly payroll will then be handled in the accounts as follows:

| | |
|---|---|
| Debit 5010 Salaries | 1 000 000 |
| Credit 1930 Bank deposits (to employees) | 700 000 |
| Credit 1930 Bank deposits (to separate bank account) | 300 000 |
| Debit 1940 Withheld tax reserve (separate bank account) | 300 000 |
| Credit 2610 Payable withheld tax | 300 000 |
| Debit 5190 Holiday pay | 120 000 |
| Credit 2960 Payable holiday pay | 120 000 |
| Debit 5410 Employer's contribution to social security | 157 920 |
| Credit 2780 Payable social security | 157 920 |

Question: How does the tax and social security system in your home country influence the accounting routines within the payroll area?

17. We sell a fixed asset

When we sell a fixed asset, for instance a company car, the following happens:

- We don't own this asset any longer, so it needs to be removed from the balance sheet
- The book value is the historical cost less the accumulated depreciations
- Under normal circumstances we sell the asset for a price that is different from the book value

    - If the sales price exceeds the book value, we will have a gain that we must include in the income statement
    - If the sales price is lower than book value, we experience a loss that we must include in the income statement
- These gains or losses will not have a cash flow effect. Cash flows are influenced by the actual sales price when this is paid to the company's bank account.

Notes:

## 1.8 Exercises

**Exercise 1**

From a company's financial reports of January 2019, we can read the following:

- The cost of goods sold was NOK 3 234 000
- Payable operating costs were NOK 829 000
- Increased balance of inventory was NOK 116 000
- Increased balance of Account Payable was NOK 288 000

Under the assumption that all costs are subject to 25.00% deductible input VAT, how much was paid to the suppliers in January 2019?

**Exercise 2**

From a company's financial reports of the first quarter of 2019 we can read the following:

- Sales income in January NOK 1 620 000
- Sales income in February NOK 520 000
- Sales income in March NOK 600 000
- Balance of the Accounts Receivable January 1, 2019 was NOK 510 000

60% of the customers purchase on credit, where average credit period is 30 days. Of the remaining customers 60% pay cash and 40% by credit card, where the credit card company deducts 3.00% commission, but transfers the rest amount the same day to the company's bank account.

Under the assumption that all sales are subject to 25.00% output VAT, how much was paid by the customers in the first quarter of 2019?
You may assume that all months in the first quarter of 2019 had 30 days and that the sales were distributed evenly throughout each month.

### Exercise 3

Explain how you can design a model that shows the difference between a company’s budgeted profit and its budgeted net change in cash flow in the same period.

# Session no. 2 – The way to the Master Budget

**Study week no. 2:**
Class Thursday January 16, 14:00-16:45
Seal, Rohde, Garrison, Noreen: Chapters 8 and 11
Video: Building a budgeted income statement, step by step

## 2.1 The hierarchy of planning

Most companies have an overall *vision*, a statement that describes the long-term objectives of the organization and how it wants to be perceived by external stakeholders. A well-defined vision statement is concise, easy to understand and interpret, customer and future oriented, challenging ambitious and inspiring, yet realistic.
The purpose of the vision statement is to serve as the foundation for a strategic plan.
Here are some (good) vision statement examples:

- Google: "To organize the world's information and make it universally accessible and useful."
- IKEA: "To Create a Better Everyday Life for the Many"
- Walt Disney: "To Make People Happy"

In addition, many companies have a *mission* statement, to accompany the vision. The mission says something about the company's raison d'être; why they are here and what overall purpose the company shall serve.
Over the last 10-15 years many companies have started to focus on *the triple bottom line*; Profit, People and Planet, instead of having the sole purpose of creating more wealth for the shareholders.

The vision (and mission) contribute to setting the overall directions in the strategic navigation process. A *strategy* can be regarded as a plan for:

- Where we are going (from current state to a future situation)
- When we should arrive (the goal-setting process should be time-bound)
- Why we are going there (and not anywhere else)
- How it is going to look when we have arrived
- How to get there (overall priorities and activities)

There are many good reasons for spending management resources in strategic planning, such as:

- The future will definitely look different from the present, but it shouldn't come as a surprise!
- Our competitors want our best customers and employees!
- Without a strategy management and employees lack overall directions and priorities!

and, the most relevant argument in this particular BI course:

- It does not make sense to make budgets without a strategy and a corresponding strategy plan!

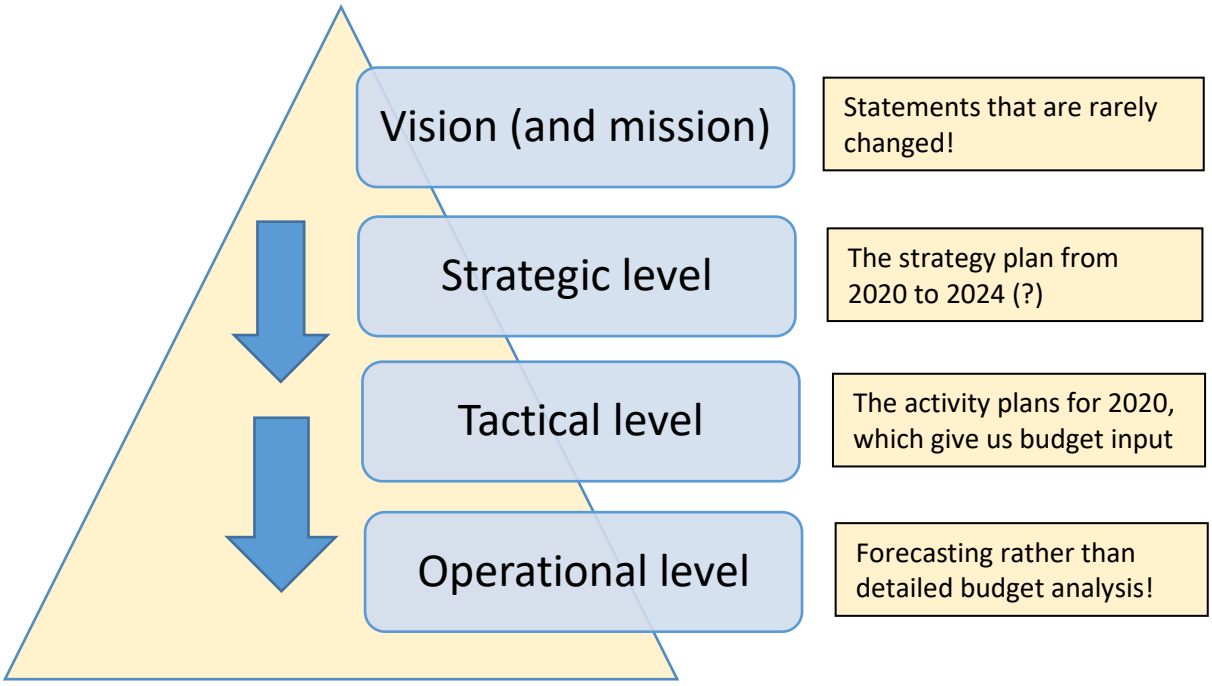
Strategic planning can have various degrees of dynamics:

- In a static strategic planning process, the company defines a fixed planning horizon, for instance the year 2024, and carves out the strategy from 2020 to 2024 and replace this with a new plan from 2024 onwards.
- In a more dynamic strategic process, the strategy is revised more often, for instance one a year, where the strategy from 2019 to 2023 is replaced by a new plan from 2020 to 2024.
- Dynamic strategy processes let the company focus on *emerging* rather than planned strategies, allowing new ideas to get the necessary attention. This way the company can faster develop products, services and competence to creative new competitive advantages

A strategy plan will not comprise a detailed *activity plan*, so when the strategic decisions and priorities are set, management must make plans on how to execute the strategy.
With an activity plan the organization decides what to do, and in which sequential order these activities should be carried out.
This plan will give us information that is relevant for the budgeting process, such as:

- Investments in tangible assets
- Recruiting and training personnel
- Research and development
- Market activities
- Growth in sales
- Development of variable and fixed costs

The hierarchy of planning can then be presented as follows:




### 2.2 What is a budget in the 21st century?

The budget is not the plan itself, but *the financial consequences of plans necessary to implement to succeed in reaching the company's overall and long-term objectives*. If management decides to change the plans along the way, the budget must be changed accordingly to reflect the changes in priorities, tempo and use of resources.

In the planning process management needs a tool to help the to calculate the financial implications of the plans and different scenarios:

- Do we have access to sufficient cash to fund our activities?
- How would the plans influence the company's future sales and profits?

The budget must therefore first and foremost be regarded as a *simulation tool*, where management has the possibility to compute the financial consequences of various options before decisions are made and plans carried out.

The budget as a simulation tool should be able to help us with:

- Predicting sales, costs and profits (budgeted income statement)
- Predicting in- and outgoing cash flows (cash flow budget)
- Predicting changes in relevant balance sheet accounts (balance sheet budgeting)

## 2.3 Measuring growth

A company's historical or future growth can be determined by different factors, depending on how we define growth:

- Growth in sales income – which can be caused by volume growth and/or higher prices
- Infrastructural growth – such as an airline company's number of destinations or the number of hotels in a hotel chain
- Product and technology growth – the ability to develop and deliver new products and services

The various growth factors are of course influencing each other; volume growth normally requires infrastructural growth and new products and services may contribute to increasing sales volume.

> Relevant for the budgeting process:
> Is the company in the process of executing *a growth strategy* or is the goal to avoid a negative development? When we are making a budget we must be able to analyze how ambitious the strategy is in terms of company growth, and the possible consequences this growth may have for the sales and cost figures.

## 2.4 Measuring profitability

A traditional way to measure profitability is to compare profits with sales revenue; the rate of return on sales. With NOK 50 mill in annual sales and a bottom line profit of NOK 3 mill, the rate of return is 6%. How profitable this is, depends on several factors, such as:

- Industry average – how well are other similar companies performing?
- The company's own history – how well is the company performing now, compared to previous periods?
- Compared to capital employed – how well is the company performing, compared to the value of its assets?

We must take a further look at the *Return on Assets*. What is the most profitable company?

- Company A above with NOK 50 mill in sales, a profit of NOK 3 mill and an average asset value of NOK 20 mill
- Company B with NOK 100 mill in sales, a profit of NOK 6 mill and an average asset value of NOK 25 mill

If we are comparing these two companies' financial performance based on rate on return of sales, our conclusion must be that they are equally profitable. If we take a second look at the capital turnover rate of these companies, we see that Company A has a turnover rate of 50/20 = 2.5 times per year, while Company B has a turnover rate of 100/25 = 4.0 times per year.
The ROA of Company A is 3/20 =15%, while the ROA of Company B is 6/25 = 24%.

A supplement to this calculation is to compute the Return on Equity. Let us suppose that Company A has an average book value of its equity of NOK 9 mill. The ROE is then 3/9 = 33.33%, which means

that for every NOK the company's shareholders have invested in the company, the company is able to return NOK 0.3333 over a period of one year. This seems to be a profitable investment!

Assume further that the company paid NOK 6 mill in dividend to the shareholder last year, the book value of the equity will then only be NOK 3 mill this year. The ROE will then be 3/2 = 150.00%, and the company will now suddenly triple is reported profitability without actually being able to create more value to is owners. We must therefore always be careful about using ROE as the only indicator of profitability, as the ROE figure will be high when the equity rate is low. A low equity level may increase the operational risk of the company.

Relevant for the budgeting process:
The best profitability indicator is the ROA, but to be able to predict the future development of the ROA we must also be able to say something about how the balance sheet will develop. We will then need to make a budgeted balance sheet.

## 2.5 Measuring solidity

A company with a high rate of equity (compared to the total assets' value) will be regarded as solid; it can experience a period of loss without significant increase of its operational risk.
A company with NOK 20 mill in total assets and a total equity of 10 mill, has a rate of solidity of 50%. This will be valuable for the company both if management expects a loss in 2020 or plan to expand and develop its activities.
But how valuable this is, depends on the asset side of the balance sheet:

- If the company's high equity is reflected in an equally high cash reserve, it is easier for the company to cover any negative cash flows from its future activities
- If the company's high equity instead is reflected in a large inventory or fixed assets, the company may need to borrow money or sell some of its assets to be able to cover a negative cash flow from its operational activities

Because a company can be able to create values not only from its equity, but also from its borrowed funds, the rate of solidity does not directly influence profitability; many profitable companies have relatively low rates of solidity, because they pay high dividends to their shareholders.
Hence, it is not a goal itself to have highest possible rate of solidity, but management and shareholders must agree on what the *optimal* level of equity is:

- How much has to be retained in the company to secure its operations and to fund future projects?
- Do the shareholders have alternative use for the surplus equity? What is the opportunity cost for them if they let the company retain its profits?

Relevant for the budgeting process:
The activity plans will give us information about the level of investments, in fixed assets, technology, personnel and development of infrastructure. How these investing activities shall be funded will depend on the current equity level, the shareholders' willingness to invest more and the possibility to borrow money from the bank.

## 2.6 Sales budgeting – a natural place to start the budgeting process

It makes sense to start the budgeting process by looking at the strategic decisions and activity plans that cover sales and market activities. This is because the future level of sales and the targeted growth rate influence cost, profits and level of investments. Hence, sales budgeting will be a natural first step when we start the simulation process that the budgets are intended to contribute to.

A practical approach could be to focus the analysis on *three major sales income factors*:

- Volume – how much shall we sell?
    - Existing markets/segments
    - New markets/segments
- Price per unit sold – should we maintain the current price model?
- Variety of products sold
    - Existing goods/services
    - Changes in the product mix
    - New goods/services

We know from micro economics theory that there is a link between changes in price and changes in demand for a given product. Here we learn that for almost all types of products it is impossible to increase the product price without experiencing a decrease in demand. The concept of price elasticity is based on the assumption that the company continue to sell existing products to existing customers. However, as long as the company succeeds in attracting new customers, the demand can increase without price cuts.
It is therefore of utmost importance to understand the drivers that influence sales volume:

- Is the total market developing so fast that it is sufficient to just maintain the market share?
- Or is our growth strategy depending on taking market shares from competitors?
- If so, what does this cost us? All types of corporate growth come with a price tag. What can we afford? What is the *optimal* combination of volume and price level?

Many companies make *market plans* derived from the overall strategy plan. Here we can find relevant information to answer the questions above. In the early stages of the simulation process we may design various market scenarios, with different assumptions regarding volume, price and product range to find the optimal mix.

## 2.7 Cost budgeting

In basic management accounting theory, we learn about variable and fixed costs. In real life, costs fall into the following categories:

- Linear variable costs (where the cost per unit is the same, regardless of volume)
- Non-linear variable costs (where the unit cost increases or decreases when volume increases)
- Step costs (fixed costs that will increase in steps when activity level increases)
- Constant costs (fixed costs that remain unchanged in the future, for instance depreciation)
- Inflation-driven fixed costs (such as office rent)

If a cost is variable or at least has an element of variability, the level of cost is influenced by a given *cost driver* that we often can influence. This cost driver can be either volume-based or structure-based:

- The direct material costs in a manufacturing company depends on the volume (the more we produce, the more material we need), but there are also other cost drivers such as the scrap rate, which again may be influenced by the level of quality.

- The costs for production planning in the same manufacturing company is not necessarily directly related to the production volume. How we choose to organize the production may though be a contributing factor to the cost level. If a large part of the production planning costs is related to procurement of material, calibration of machinery or training, we face a structure-based cost driver. If we want to reduce cost in this area, we should have longer production series to reduce the frequency of procurement, calibration and training activities.

When we are extracting information from the activity plans to make a cost budget, we should look for *changes in the cost structure*:

- What are the existing costs that are unavoidable from one year to another? These are the most fixed of the fixed costs, such as for instance costs for the premises, mortgage costs, depreciation and costs for the personnel that will continue working for the company.
- Are there any costs that we now can avoid? Where are the cost cutting potentials?
- Will our future activities entail any new costs, such as:
    - New personnel, recruiting, training?
    - Investments in fixed assets?
    - New loans and interest costs?
    - Development costs?
    - New sales and marketing costs?

The cost structure is influenced by the industry that the company is engaged in:

- In a retailing or wholesaling company the *gross margin* is of utmost importance. Will the ratio between sales income and cost of goods sold remain unchanged? Do we expect that some products/product groups will develop differently from others?
- In a service rendering company costs are influenced by changes in the portion of the hours work that can be charged to the principals. How many hours do we expect to work and how many of these will are for internal activities that we cannot charge the customers?
- A real estate company's costs are highly influenced by the level of mortgage interests as well as costs of modernizing and refurbishing the premises.

Notes:

## 2.8 Exercises

**Exercise 4**

Radioactive AS imports DAB-radios from a manufacturer in Taiwan. The company is now preparing budgets for first half of 2020. We have the following information from the forecasts for second half of 2019:

| | |
|---|---|
| Sales volume | 8 000 radios |
| Average sales price | 780.00 kr |
| Costs of goods sold | kr 2 800 000 |
| Salaries and other payable personnel costs (*) | kr 1 600 000 |
| Other payable operating costs (*) | kr 800 000 |
| Depreciation (*) | kr 100 000 |

(*) Costs that can be regarded as fixed or step costs within the planning horizon.

The demand for such radios are expected to fall in the first half of 2020, but the market is quite price sensitive, but the decrease in sales volume is not expected to be dramatic if the company reduces the sales price a little.

Radioactive AS faces *two alternative scenarios* for first half of 2020:

- They can keep the sales prices as in second half of 2019. The company expects then a reduction in sales volume of 25%, compared with second half of 2019. As a consequence of the reduced activity level will both salaries and other payable personnel costs as well as other payable operating costs be reduced by 20% each.
- They can reduce the sales price by 10%. The company expects then a reduction in sales volume of only 5%, and a corresponding drop of variable costs.

The purchase price per unit is expected to be the same as for the second half of 2019 in both of the two scenarios.
What do you advise the company to do? Document your advice with the necessary calculations.

# Session no. 3 – Cash flow predictions

**Study week no. 3:**
Class Thursday January 23, 2020 14:00-16:45
Video: Building a cash flow budget, step by step

## 3.1 Net Working Capital

Imagine a situation where the short-term liabilities exceed the value of the current assets. Chances are high that the company then cannot pay meet its obligations to pay suppliers, the authorities or banks when the various liabilities are due for payment.

| | | |
|---|---|---|
| Inventory<br>Accounts Receivable<br>Other short-term claims<br>Bank deposits | < ? | Accounts Payable<br>Payable taxes<br>Other short-term liabilities |

The net working capital is the difference between current assets and short-term liabilities. With a positive working capital, the company faces a lower risk for bankruptcy.
The net working capital changes from day to day, and 31st December is just one of 365 (366) days of the year. It is therefore the *average net working capital* over a longer time period that is relevant, and the higher the average net working capital is, the lower is the company's operational risk of bankruptcy over time.

Not all of the current assets are as current as bank deposits! Before we conclude solely on the basis of accounting figures, we should take a look at how at the composition of the current assets. The company's liquidity does not necessarily improve if the company has a high level of slow moving inventory. Moreover, a large portion of slow paying customers will also contribute to reducing the potency of the current assets.

## 3.2 Measuring liquidity

A traditional way of measuring how liquid a company is, is to present the net working capital as a ratio, where we divide the current assets value by the value of the short-term liabilities. This acid test or quick ratio as it is also called, will conclude with a figure higher than 1.0 if the net working capital is positive.
Some years ago, the norm was often that the current assets should be twice as high as the short-term liabilities ("acid test" score of 2.0 or more). Securing current assets is capital demanding in itself, and neither inventories, receivables and bank deposits yield much interest nowadays. It is therefore not a goal in itself to have to have as much current assets as possible, and two relevant questions are therefore:

- What is the optimal net working capital?
- And how can we utilize a cash surplus the best possible way? Paying back our loans? Investing in other companies? Executing a growth strategy? Exploring new markets? Developing new products and services?

The liquidity is also influenced by the turnover rates:

- Receivables turnover rate: Sales income/average balance Accounts Receivable (with VAT deducted). 365/receivables turnover rate gives us *actual credit period* toward customers (as opposed to the formal credit period as it is stated in the invoices to the customers)
- Payables turnover rate: Purchases on credit/average balance Accounts Payable (with VAT deducted). 365/payables turnover rate gives us actual credit period against suppliers.
- Inventory turnover rate: Purchased goods/average inventory value. 365/inventory turnover rate gives us average storage period. This can be an important tool in logistics and warehouse planning, particularly when we analyze the turnover rate of different articles/article groups.

### 3.3 Why cash flow budgeting?

It is one of the most important management tasks to secure sufficient cash reserves in the company:

- To reduce the risk for at public or private creditor may file the company for bankruptcy
- To secure a buffer to cover unexpected obligations
- And to be able to fund the execution of the strategies and corresponding activity plans

When the main role of the budget is to simulate the expected financial consequences of the company's plans over a given period, the budgeted cashflow is (at least) as important as the budgeted profits.
Cash flow budgeting is about predicting how the company's bank statements will look like in the future. We must then first understand what the most common sources of incoming and outgoing cash-flows are in real life.

## 3.4 Main sources of the incoming payments

There are in general six ways of increasing the balance on a company's bank account:

1. Incoming payments from customers
2. Sales of fixed assets
3. Borrowing
4. Interest revenues
5. Realized financial gains, for instance selling shares in other companies
6. Emission of new shares

## 3.5 Main recipients of the outgoing payments

There are in general nine ways of reducing the balance on a company's bank account:

1. Paying suppliers of goods intended for resale or to be used in own manufacturing
2. Paying other suppliers (i.e. other payable operating costs)
3. Paying salaries and other personnel costs
4. Paying taxes (corporate tax, social security contribution, VAT, import duties)
5. Paying for investments
6. Interest costs
7. Realized financial losses
8. Paying back loans
9. Paying dividend to share holders

### 3.6 Formats for cash flow budgets

There are in general three different formats for cash flow budgets:

1. The traditional matrix based format

| | January | February | March |
|---|---|---|---|
| Opening balance | 403 000 | 323 000 | 461 000 |
| + Paid by customers | 1 267 000 | 1 427 000 | 1 111 000 |
| - Paid to suppliers | 635 000 | 598 000 | 917 000 |
| - Paid to employees | 712 000 | 691 000 | 704 000 |
| = Net cash flow | -80 000 | +138 000 | -510 000 |
| Closing balance | 323 000 | 461 000 | -49 000 |

When is this model preferable?

- When using Excel or other spreadsheets for the presentation
- The model allows us to present the cash flow development graphically
- When we need detailed cash flow budgets for shorter periods, where we also need to know when money will be paid during this period
- When we use a short-term rollover planning, for instance a new 12-week cash flow budget every week, where we add one more week to the planning horizon

2. Using the cash flow statement model – direct method

+ Incoming payments from sales of goods and services
+ Incoming payments from interests and other financial gains
- Outgoing payments from purchase of goods and services
- Outgoing payments to employees, social security costs et cetera
- Outgoing payments of interests and other financial losses
- Outgoing payment of taxes
= Cash flows from operational activities

+ Incoming payments from sales of fixed assets
- Outgoing payments from purchases of fixed assets
+ Incoming payments from sales of shares in other companies
- Outgoing payments from purchasing shares in other companies
= Cash flows from investing activities

+ Incoming payments from borrowing
- Outgoing payments from paying back loans
+ Incoming payments from emission of new shares
- Payment of dividend to share holders
= Cash flows from financing activities

When is this model preferable?

- When we want to see if our daily operations yield sufficient cash flow to pay for our investing and financing activities
- To see if it is possible to fund cash flow losses from daily operations with investing and financing activities to solve a temporary cash problem

3. Using the cash flow statement model – indirect method

Profit before taxes
- Paid taxes
+ Depreciation
+/- Change in inventory (increase is deducted; decrease is added)
+/- Change in Accounts Receivable (increase is deducted; decrease is added)
+/- Change in Accounts Payable (increase is added; decrease is deducted)
+/- Change in other items where payments are not done in the same period as the costs are taken, such as for instance accruals for holiday pay (changes in short time claims and obligations)

The cash flows from investing and financing activities are similar to the direct method.

When is this model preferable?
- As with the direct method, but this method gives us in addition gives the opportunity to analyze the difference between the period's profits and the net cash flow.

## 3.7 Balance sheet budgeting

A budgeted balance sheet predicts how the balance sheet looks at the end of the planning period. To make a budgeted balance sheet we need:
- A detailed budgeted income statement
- An equally detailed cash flow budget, where information about investments, borrowing and payback of loans, emission of new shares and dividend to shareholders are included

In general, we can say that the budgeted balance sheet is constructed step by step by using this model:

Opening balance
+/- Changes during the planning period
= Closing balance

| | |
|---|---|
| Fixed assets: | Opening balance<br>+ Investments (from cash flow budget)<br>- Depreciation and impairment (from budgeted income statement)<br>- Sales of assets (from budgeted income statement)<br>= Closing balance |
| Inventory: | Opening balance<br>+ Purchases (from cash flow budget)<br>- Consumption (from cost of goods sold in the budgeted income statement)<br>= Closing balance |
| Accounts Receivable: | Opening balance<br>+ Sales on credit (from budgeted income statement)<br>- Paid from customers (from cash flow budget)<br>= Closing balance<br>Sometimes it is easier to ask ourselves the question: Who owe us money at the end of the period? If customers pay us after 30 days, the A/R per December 31 equal the credit sales in the month of December. |

| | |
|---|---|
| Bank deposits: | Opening balance<br>+ Incoming payments (from cash flow budget)<br>- Outgoing payments (from cash flow budget)<br>= Closing balance (from cash flow budget) |
| Equity: | Changes in share capital? Nominal value? Share premium<br>The budgeted profit after taxes will increase/reduce retained earnings accordingly |
| Long-term liabilities: | Opening balance<br>+ Borrowing (from cash flow budget)<br>- Paid back loans (from cash flow budget)<br>= Closing balance |
| Accounts Payable: | Opening balance<br>+ Purchases on credit (from budgeted income statement)<br>- Payments to suppliers (from cash flow budget)<br>= Closing balance<br>It is often easier to ask the question: Who do we owe money at the end of the period? If we pay suppliers after 30 days, the A/P per December 31 equal the purchases on credit made in the month of December. |
| Payable taxes: | Opening balance<br>+ New taxes this period (from budgeted income statement)<br>- Paid taxes (from cash flow budget)<br>= Closing balance |
| Payable VAT: | If all previous VAT terms are paid, the payable VAT at the end of the period equals the output VAT less then input VAT for the last VAT term. In Norway, where the VAT terms are bi-monthly, payable VAT December 31 will have its origin in the VAT from November and December. |

## 3.8 Exercises

**Exercise 5**

A company had a balance of bank deposits of € 2 506 000 on December 31, 2019. At the end of January 2020 the same balance was € 1 458 000. In January the company paid dividend to its shareholders amounting to 10% of the share capital of € 1 400 000. In addition, the company paid back the remaining balance on a long-term mortgage loan of € 936 000.

What was the company's cash flow from its operating activities in January 2020?

**Exercise 6**

The company Rio Mar AS has the following budgeted income statement for the year 2020:

| | |
|---|---|
| Sales income | 20 000 000 |
| Gain from sales of assets | 300 000 |

| | |
|---|---|
| Cost of sales | 10 000 000 |
| Salaries | 5 000 000 |
| Depreciation | 800 000 |
| Other operational costs | 3 600 000 |
| Operational profit | 900 000 |
| Interest costs | 400 000 |
| Profit before taxes | 500 000 |
| Taxes | 300 000 |
| Profit after taxes | 200 000 |

The balance sheet 1.1.2020 and *the budgeted balance sheet* 31.12.2020 look as follows:

| Balance sheet | 1.1.2020 | 31.12.2020 |
|---|---|---|
| Land | 1 000 000 | 1 000 000 |
| Buildings | 4 000 000 | 3 800 000 |
| Machinery | 2 500 000 | 3 000 000 |
| Inventory | 3 000 000 | 3 500 000 |
| Accounts Receivable | 2 000 000 | 2 300 000 |
| Bank deposits | 500 000 | 200 000 |
| Total assets | 13 000 000 | 13 800 000 |
| | | |
| Share capital | 1 000 000 | 1 500 000 |
| Premium fund | 250 000 | 500 000 |
| Retained earnings | 1 650 000 | 1,700 000 |
| Long-term liabilities | 3 000 000 | 3 300 000 |
| Payable taxes | 400 000 | 250 000 |
| Payable dividend | 100 000 | 150 000 |
| Short-term liabilities | 1 800 000 | 1 500 000 |
| Accounts Payable | 4 800 000 | 4 900 000 |
| Total equity and liabilities | 13 000 000 | 13 800 000 |

According to Rio Mar's plans for 2020, the following additional information may be relevant:

- There will be a new bank loan of 500 000 in April 2020
- There will be an investment in machinery of 1 300 000 in May 2020
- The accrual for dividend for 2019 and 2020 equals 10% of the share capital

Present the budgeted cash flow for 2020 using a cash-flow statement based on the indirect method.

**Exercise 7**

The Master Budget for Sagen & Hammer AS for Q2 2020 looks as follows:

| | April | May | June | Total Q2 |
|---|---|---|---|---|
| Sales income (1) | 3 726 000 | 3 269 000 | 3 102 000 | 10 097 000 |
| Cost of sales (2) | 745 000 | 503 000 | 478 000 | 1 726 000 |
| Salaries & other personnel costs (3) | 1 277 000 | 1 236 000 | 1 211 000 | 3 724 000 |
| Depreciation | 36 000 | 36 000 | 36 000 | 108 000 |
| Other operational costs (4) | 1 445 000 | 1 521 000 | 1 424 000 | 4 390 000 |
| Operating profit | 223 000 | -27 000 | -47 000 | 149 000 |
| Financial revenues (5) | 0 | 0 | 11 000 | 11 000 |
| Financial costs (5) | 4 000 | 4 000 | 18 000 | 26 000 |
| Profit before taxes | 219 000 | -31 000 | -54 000 | 134 000 |

The Balance Sheet is expected to look as follows March 31, 2020:

| | |
|---|---|
| Land | 600 000 |
| Buildings | 3 262 000 |
| Machinery and equipment (6) | 2 021 000 |
| Company cars | 342 000 |
| Inventory, finished goods | 1 171 000 |
| Inventory, material | 623 000 |
| Accounts Receivable (1) | 4 328 000 |
| Other short-term claims | 261 000 |
| Bank deposits | 1 330 000 |
| Total assets | 13 938 000 |
| Share capital | 800 000 |
| Retained earnings | 2 582 000 |
| Mortgage loans (7) | 4 199 000 |
| Accounts Payable (2, 4) | 2 722 000 |
| Payable holiday pay | 1 213 000 |
| Payable social sec. and taxes (3) | 1 190 000 |
| Other short term liabilities | 1 232 000 |
| Total equity and debts | 13 938 000 |

(1) All sales are on credit and the customers pay in average after 45 days

(2) The suppliers of raw material and components are paid in average after 60 days

(3) The salaries and personnel costs are paid the month they occur, except social security. Payable social security March 31, 2020 is kr. 467 000 and expected balance per June 30, 2020 is kr. 417 000

(4) All other suppliers are paid after 30 days in average

(5) The financial items are paid the same month the revenues and the costs occur.

(6) A new computer-aided cutting machine is purchased in April for kr. 342 000. Payment is expected to be done in June.

(7) There will be an installment of kr. 100 000 on the mortgage loan that will be charged to the bank account in May.

a) You may disregard any effects of Value Added Tax (VAT) and corporate taxes. You may also assume that all three months in Q2 have 30 days and that sales are evenly distributed throughout the months.
What is expected balance on Sagen & Hammer AS' bank account June 30, 2020?

b) What would this balance be if the company's customers in average paid after 30 days instead of 45, and paid *all* suppliers after 60 days (not only the suppliers of raw material)?

**Exercise 8**

The company Alpha Omega Inc. has estimated its balance sheet to look as follows per December 31, 2019:

| | |
|---|---|
| Fixed assets | 120 000 000 |
| Inventory | 35 100 000 |
| Accounts receivable | 23 976 000 |
| Bank deposits | 5 214 000 |
| **Total assets** | **184 290 000** |

| | |
|---|---|
| Share capital | 36 000 000 |
| Premium fund | 7 200 000 |
| Retained earnings | 8 400 000 |
| Long-term liabilities | 78 000 000 |
| Short-term liabilities | 18 432 000 |
| Overdraft bank account (1) | 13 980 000 |
| Payable taxes | 1 560 000 |
| Accounts payable | 11 400 000 |
| Unpaid share holder dividend | 3 600 000 |
| Other short-term liabilities | 5 718 000 |
| **Total equity and liabilities** | **184 290 000** |

The budgeted income statement for year 2020 looks as follows:

| | |
|---|---|
| Sales income | 336 000 000 |
| Gain from sales of fixed assets | 2 000 000 |
| Costs of goods sold | 172 000 000 |
| Salaries and other personnel costs | 120 000 000 |
| Depreciation | 8 000 000 |
| Other operational costs | 24 000 000 |
| **Operating profit (EBIT)** | **14 000 000** |
| Interest income | 120 000 |
| Interest costs | 5 600 000 |
| Profit before taxes | 8 520 000 |
| Corporate tax (2) | 2 385 600 |
| **Profit after taxes** | **6 134 400** |

(1) This a bank account where the bank allows the company to have a balance in the bank's favor. The limit of this credit is currently 16 000 000.
(2) The corporate taxes are 100% payable; to be paid the year after they are accrued for, no deferred taxes

There is additional information pertaining to the budgets for 2020, as follows:

1. You may disregard the effect of sales tax or value added taxes

2. You may assume that the sales are evenly distributed over the year and that all months have 30 days.

3. Sales income: Credit customers account for 90% of the sales, the rest is paid cash. Of the credit customers, 20% pay in the same month that the sales are registered, 70% the month after and the remaining 10% two months after.

4. Costs of goods sold: All purchases of goods are against credit. On average 30% is paid in the month of purchase, 50% the month after and the remaining 20% two months after.

5. Inventory: The company plans to reduce the value of the inventory by 4 000 000, during 2020.

6. Other operational expenses: You may assume that these are payable costs and that they are paid the same month they occur.

7. Salaries: Payable salaries per 31 December 2019 is estimated to be 360 000, which is expected to increase to 440 000 by the end of 2020. This is placed among other short-term liabilities.

8. Interest costs: Payable interests per 31 December 2019 is estimated to be 1 440 000, which is expected to decrease to 1 280 000 by the end of 2020. These are also placed under short-term liabilities.

9. Fixed assets: The company plans to buy and pay for investments in fixed assets of 32 000 000 during 2020. The company also plans to sell some of their existing fixed assets, which at the time of sales are expected to have a book value of 6 000 000.

10. Emission of new shares: It is expected to be paid 22 000 000 from new investors during 2020, of which 6 000 000 is a share premium

11. Long-term loan: The company plans to borrow 20 000 000 from their bank in 2020. The short-term loan of 18 432 000 will be paid in full and there will be installments on existing bank loans amounting to 10 000 000 in 2020.

12. Dividend: You may assume that the accrued dividend per 31 December 2019 will be paid early in 2020 and you should make a new accrual of 4 800 000 at the end of the year. The remaining profits should be offset against retained earnings.

13. Bank accounts: The ordinary bank account is estimated to increase its balance from 5 214 000 to 7 214 000 in 2020. The balance of the overdraft account at the end of 2020 will be determined by the other balance sheet accounts (the rest amount on the equity and liability side of the balance)

Question a)
Present the expected balance sheet of Alpha Omega Inc. at the end of year 2020.

Question b)
Explain the difference between the budgeted profit and the expected net cash flow for 2020, using a suitable model that specifies the sources of this difference.

Notes

# Session no. 4 – Analyzing projects

**Study week no. 4:**
Class Thursday January 30, 2020 14:00-16:45

## 4.1 Sources of funding projects

We have a plan, but what will it cost us and how can we secure sufficient funding to execute it?
The budgeted cash flow statement will indicate:

- The net cash flow from operational activities
- The net cash flow from investing activities

In addition, we must decide if we can accept that the net cash flow can be negative and how much cash we need *as a minimum* at the end of the planning period to avoid operational risk.

An example:
A new company started up in January 2020 with kr 1 000 000 in share capital. The cash flow from operational activities in the first year is expected to be kr -2 500 000 and the cash flow from investing activities is expected to be kr -1 500 000. At the end of the year, management has decided that the company's bank deposit must be kr 2 000 000 at the end of 2020, to secure operations in 2021. Hence, the company needs kr 5 000 000 to fund the first year of business. Budgeted net cash flow from financing activities must therefore equal kr 5 000 000.

In general, there are three sources of funding:

1. Money from existing owners – Can we go back to our shareholders and ask for more money? If so, should this be in a form of an emission of new shares or a loan? Sometimes a relatively high share capital looks impressive, but a loan is more flexible and should be paid back, with interest.

2. Money from new investors – Can we attract new investors? If so, how much control are existing owners will to give up and how much should the new investors pay for their stake of the company?

3. Borrowing externally – Banks and other companies that offer financing services will normally require a collateral for a loan. Real estate and company cars are assets where it is often possible to finance up to 70-80% of value, so this may be a place to start.

An example:
A company was established 10 years ago and has been financially successful. The share capital is kr 2 000 000 and the retained earnings kr 3 000 000, hence the book value of the company's equity is kr 5 000 000. The market value depends on what new investors are willing to pay for the company as well as what current shareholders are willing to sell the company for. If the company is expected, with a degree of profitability, to continue making money in the future, chances are that the market price is considerably higher than the above book value.
If the company needs the money rather than its current owners, there is a need to emit new shares when an investor shows interest in buying a part of the company. However, if the company has secured its funding through its daily operations, the new investor can buy some of the existing shares and settle the investment without any consequences for the company's accounts.

If new investors for instance are willing to pay kr 4 000 000 for 30% of the company, it is priced at kr 12 000 000. The share capital will then increase from kr 2 000 000 to kr 2 857 000 (2 000 000/1.3), where the new investors own shares for kr 857 000 (30%) and existing owners still own shares for kr 2 000 000 (70%).
When the investors pay kr 4 000 000 for the shares, kr 3 143 000 will be added to the premium fund, which is a part of the company's equity. The equity (as well as the bank deposit) will increase in total by kr 4 000 000.

### 4.2 Starting new business

In Norway, more than 55% of the limited companies (AS) established five years ago are already liquidated. There are many reasons why entrepreneurs fail and Murphy's law seems to be present everywhere; what can go wrong when you start up a new business, will go wrong. The question is, are the entrepreneurs capable of handling the things that go wrong along the way or do they give up?

Entrepreneur risk seems to be determined by many factors:

- Factors present already before starting up – such as age, experience and skills, motivation and level of ambitions, capacity and energy level, network and not least; financial resources.
- Factors in the start-up phase – such as priorities, practical ways of organizing the entity, use of resources, marketing efficiency and the acceptance of trial and error
- Factors that may prevail after initial start-up – such as ability to listen to customers and understanding the market, sufficient focus on growth and profitability, quality of recruiting and training personnel, stamina and the ability to not rest on the laurels too early

When a new business is planned, budgets are made for the first time with no historical data to measure them against. It is easy to overestimate future revenues and underestimate future costs. Often it helps to use a *milestone planning model*, where it is possible to celebrate the small victories along the way to a more long-term and overall goal.

An example:
Three BI students developed the Internet site and smartphone application www.staffersapp.com, which was launched late 2018. On this site students and other people looking for temporary work in restaurants, cafes and bars can register and they are grouped according to previous experience and acquired skills. Companies that need temporary work will find candidates on this site and pay a certain percentage to Staffers, who act as middle man. The personnel are employed directly by the restaurant, so Staffers does not act as a traditional temporary agency, such as for instance Manpower or Adecco.
When the BI students approached their management accounting lecturer for some advice, it became clear that the first goal of the company must be to secure enough business that the three investors, who all work full time for the company, can get a monthly salary equal to what they would have had if they had not started the company but were recruited somewhere else. This strict *opportunity cost thinking* may help entrepreneurs to be more rational when nurturing their own baby company. There are many steps along the way to secure long-term value creation and the financial planning must focus on one step at the time.

## 4.3 Managing growth

Many companies want to grow, and in general we can say that are four different strategic paths to follow:

1. Sell more of the same to customers or customer segments that we already know well – This is known as the *cash cow strategy*. If IKEA wants to continue its growth with this strategy, they must sell more Billy bookshelves to customers who usually shop for furniture at IKEA stores (and probably have Billy shelves already at home).

2. Sell existing products to new customer segments – This is known as *market development*. This happens when IKEA is establishing stores in a new country (they are already present in 52 different countries already). Globalization strategies are typical market development activities.

3. Sell new products to existing customer segments – This is known as *product development*. This is what happened when IKEA some years ago started selling kitchen appliances such as for instance refrigerators, induction cooking plates and ovens to supplement their modular kitchens.

4. Sell new products to new customer segments – This is a costly combination of market and product development. Before the mid-nineties the Finnish company Nokia was a diversified company, with divisions selling products as diverse as industry rubber tubes and PC monitors. The company then decided to concentrate on only one product that they intended to sell globally; mobile phones. This was a new product sold to customers that had no previous relation with Nokia. Nokia was market leader in the mobile phone segment for more than 10 years.

When planning for growth, we must give some basic questions sufficient attention:

- What do we need to invest and how should this investment be funded?
- How long would it take before we can expect a revenue growth and what is a realistic increase in sales volume?
- How price sensitive is the market demand?
- What are the corresponding increases in variable costs?
- To which degree can we utilize our own resources better? Do we have excess capacity in various areas that we now are able to utilize?
- Do we expect any new administrative costs?

# Session no. 5 – Traditional models for cost allocation

**Study week no. 5:**
Class Thursday February 6, 2020 14:00-16:45
Student exercise seminar Thursday February 6, 17:00-19:45

## 5.1 Decision relevance

What is relevant information when we want to make a rational decision? Let us take a look at a simple situation where we have two mutually exclusive alternatives:

- Costs (or revenues) that remain the same, whether we choose alternative A or B, are not relevant. Hence, we are looking for the costs (and revenues) that are *different* when we choose one alternative and reject the other.
- A question is then; is the cost avoidable or not? Most fixed costs tend to be *unavoidable* and should be left out of the costing model
- We should also only focus on future costs, history is not relevant. Historical costs that we cannot reverse (sunk costs) are there irrelevant, if we are 100% rational.

## 5.2 Cost objects and cost allocation

A cost object is any item for which costs are being separately measured:

- The whole company (of course)
- A division, department or other internal cost center of the company
- A standardized product or service (standard costing)
- A tailor-made product or service
- A given production series (for instance 100 000 chocolates)
- A business process (a set of activities in a given sequential order carried out to conduct a predefined job)
- An activity or a group of activities (Activity Based Costing)

When we are designing costing models we start with *the direct costs*, the costs that are caused directly by the object we are analyzing. Next step is to see what other costs we think that the cost object should cover. These are *the indirect costs* pertaining to the cost object.

It is not possible to determine direct and indirect costs from the company's income statement accounts. What are direct costs for one specific cost object could be indirect in another costing model.

Here is an example: A bus company has its own garage where the buses are maintained and repaired. Each bus can be regarded as a separate cost object, which can be a sensible way of allocating costs if we want to know how maintenance costs develops along with the mileage of the bus, and also if there is a need to compare different types of buses. In this case the costs of running the garage (rent, electricity, service supervision, depreciation on tools and machinery) are the indirect costs, while the mechanics and their use of parts and other material are the direct costs. However, if the bus company wants to analyze the total costs of the service and maintenance functions, all the costs in this department are direct costs (including those regarded as indirect if it is

the buses that are our cost objects), while indirect costs will be a portion of the administrative costs of the bus company.

Typical direct costs are (depending on the cost object, of course):

- Costs for production labor
- Raw material, prefabricated material and components
- Freight and often a part of the logistics costs
- Packaging
- Specific costs for research and development
- Specific costs for market campaigns and advertising
- Specific cost for quality control

The direct costs are normally quite easy to discover and compute; they are often a result of causal relationships that are visible and costs that therefore can analyzed specifically. Often it is sufficient to allocate only the direct costs, to increase the level of knowledge about the cost object.

An example: A supermarket needs to know how much the various product groups add to their profits. If they for instance need to know more about pickled cucumbers it is probably sufficient to analyze sales volume, average sales and purchase prices per unit. With this information the supermarket will be able to determine how much shelf space they should use for the cucumbers. If the company wanted that the product should absorb a portion *of all costs* of running the supermarket, the quality of the decision-making process would not improve, because these costs are unavoidable, not caused by the object and therefore not relevant for the decisions we have to make.

Although we should focus first on allocating and analyzing direct costs, the indirect costs must also be subject to further analyses. In general, all companies have a cost structure that could be simplified as follows:

- The cost for producing the goods and services. This can be regarded as the company's primary activities, such as lecturing and research at BI, Apple Inc.'s production of phones, iPads and laptop computers or the work that is done in the kitchen of a restaurant.
- The additional costs for the administration and development of the company. These costs have their origins in different organizational units on different levels of the hierarchy, from top management to for instance accounting, customer support, IT-services and human resource management.

So, how much does it cost us to manufacture our products and how much comes on top of that to run the business? We often refer to the latter category of costs as *overheads*. The administrative overheads are often a large part of the company's costs and in order to understand them better, we need to analyze areas such as:

- Costs related to how we organize production
- Costs for developing new products and services
- Costs for maintaining ideal level of quality
- Costs in supporting activities such as management, accounting, human resources management and IT-support
- Cost for marketing and public relations related activities

## 5.3 Generic cost drivers

A cost driver is a factor that determines the level of costs. Because the level of costs has a direct impact on the company's ability to make money, analyses of cost driver relevance is of utmost importance. These analyses can be conducted on two different levels:

- Cost drivers that determine the general level of cost, where we analyze on a business unit level
- Cost drivers that determine the use of resources in a business process, group of related activities or in a single activity.

Let us now focus on the first group, and look at processes and activities later. The Harvard professor Michael Porter wanted to learn more about the various factors that determine the general level of costs in companies. If two companies in the same industry, almost equal in size, report different costs and profitability, we may find the reason for this in the drivers of the cost.
In 1985 Porter presented a list of generic cost drivers, factors that are relevant for most companies in various types of business:

1. Economies of scale – Companies that produce in higher volumes are able to utilize the resources better and cost per unit drops.
2. Learning/improving routines – Companies learn, both from their successes and failures, and this learning contribute to a better use of the resources.
3. Different levels of utilization of production capacity – We shall later learn more about the costs of excess capacity.
4. Connected activities – The more successful the company is to linking the various processes and activities to each other, the more efficient the operations are.
5. External collaboration agreements/sharing information – Strategic alliances, sharing resources for research, development and marketing.
6. Vertical integration – When the company wants to have a better control of the supply chain, investing in both the company's various suppliers as well as the companies that distributes the goods and services.
7. Right timing for launching new activities – Many good ideas have been launched too early, while other activities come too late to create sufficient value.
8. Strategic decisions – Porter understood early that strategic choices influence level of costs and that many of these decisions create irreversible and therefore also unavoidable fixed costs.
9. Localization – It costs more to operate in Norway than for instance in Vietnam and it costs more to operate in Oslo than in Narvik.
10. Legal requirements and regulations – The more regulations the company has comply to, such as for instance required minimum wages or the need to document the work in detail, the higher the personnel costs will be.

Two years later, in 1987, Riley presented an alternative model, where he grouped the cost drivers in two main groups, operative and structural drivers.

The operative drivers say something about the company's ability to create an efficient operative management:

1. The degree of employee involvement in problem solving
2. Quality Management
3. The degree of capacity utilization
4. How well-functioning the production systems are
5. Product design (with regards to production efficiency)
6. The ability to develop a cooperation with suppliers and distributors

The structural drivers are:
7. Economies of scale and effects of cooperation with others
8. Experience
9. Utilization of technology
10. Diversity of product and service range

We see that Riley has included some of Porter's costs drivers, but also added some new factors, such as employee involvement, quality focus (do it right, once and for all!), production system layout, simple production processes, technology factors as well as the variety of different products and services offered to the customers.

## 5.4 Traditional cost allocation

Much of traditional management accounting theory was originally developed some hundred years ago in the wake of two important events:

- The success of Scientific Management, originally presented by Frederick Taylor (1856-1915) - The theory of management that analyzes and synthesizes workflows where the main objective was improving economic efficiency, especially labor productivity. This was one of the earliest attempts to apply science to the engineering of processes and to management.
- The success of mass production of more complex products, particularly Henry Ford's (1863-1947) contribution to standardized production of automobiles

James O. McKinsey (1889-1937) was an American accountant, management consultant, professor of accounting at the University of Chicago, and founder of McKinsey & Company, who wrote three influential books in the 1920s; Budgetary Control (1922), Managerial Accounting (1924) and Business Administration (1924). These books formed much of the basis of what we today regard as basic management accounting, such as product costing and budgeting.

We must not forget that these models were developed in a different society that the ones we live in today. Mass production and time studies formed the basis for standard costing and the cases and exercises focused on manufacturing companies. The service industry and the retailing businesses did not get same academic attention.
One of the challenges that early management accounting models dealt with was the allocation of indirect cost to the cost object, which in most cases was a physical product. How could we split large sums of budgeted administrative costs and allocate these onto each single product? There was a need to calculate allocation rates for each relevant cost center.

Here is an example:
A shoe factory in Albany, New York plans to produce 100 000 shoes next year. The company produces two different types of shoes, Alfa and Omega. Alfa is the cheapest model that the company sells to its retailers for $ 19.00 per pair, while a pair of Omegas are sold for $ 36.00.

The planned production next year is 70 000 Alfas and 30 000 Omegas. By studying the production process thoroughly, management has determined that the direct costs per unit next year will be:

| | | Alfa | | Omega |
|---|---|---|---|---|
| Direct material | | $ 3.00 | | $ 5.00 |
| Direct labor | 0.2 hours * $ 20.00 = | $ 4.00 | 0.6 hours * $ 20.00 = | $ 12.00 |
| Packaging and freight | | $ 0.50 | | $ 0.50 |
| | | --- | | --- |
| Direct costs per unit | | $ 7.50 | | $ 17.50 |

The budgets for next year suggests the following indirect costs:

| | |
|---|---|
| Production Department | $ 480 000 |
| Sales and Administration Department | $ 306 000 |

In traditional product costing it has been common to establish an allocation rate for the indirect production costs based on production activity; the number of hours expected to produce the annual outcome ("production overheads"). With 70 000 Alfas that take on average 0.2 hours to produce and 30 000 Omegas that use on average 0.6 hours in the production process, the total number of production hours are 14 000 + 18 000 = 32 000. The allocation rate for the indirect production costs is therefore $ 480 000/32 000 = $ 15.00 per hour.
We can now calculate the production costs per unit:

| | Alfa | Omega |
|---|---|---|
| Direct costs per unit | $ 7.50 | $ 17.50 |
| Ind. prod costs | 0.2 hours * $ 15.00 = $ 3.00 | 0.6 hours $ 15.00 = $ 9.00 |
| = Total production costs per unit | $ 10.50 | $ 26.50 |

In traditional product costing it has been common to allocate indirect sales and administration costs on top of production value ("administrative overheads"). We must then calculate the total production value:

| | |
|---|---|
| Alfa: 70 000 units * $ 10,50 | $ 735 000 |
| Omega: 30 000 units * $ 26.50 | $ 795 000 |
| | --- |
| = Total annual production value | $ 1 530 000 |

The administrative overheads are then $ 306 000/1 530 000 = 20.00% and we can now complete the costing models:

| | Alfa | Omega |
|---|---|---|
| Average sales price per unit | $ 19.00 | $ 36.00 |
| - Direct costs per unit | $ 7.50 | $ 17.50 |
| - Indirect production costs per unit | $ 3.00 | $ 9.00 |
| - Ind. sales/adm costs | $ 10.50 * 20.00% = $ 2.10 | $ 26.50 * 20.00% = 5.30 |
| | --- | --- |
| = Budgeted profit per unit | $ 6.40 | $ 4.20 |
| = Total budgeted profit | $ 448 000 | $ 126 000 |

If we are uncertain that indirect costs have been allocated correctly, we can test the costing model as follows:

- Indirect production costs (3.00 * 70,000) + (9.00 * 30,000) = 480 000 (correct!)
- Indirect sales/adm costs (2.10 * 70,000) + (5.30 * 30,000) = 306 000 (correct!)

## 5.5 Limitations of traditional cost allocation models

How good is the above costing model? There are a couple of things we should look into:

- With this model we are trying to make fixed cost variable! We don't know exactly how much of the total indirect costs of $ 786 000 that are *not* influenced by the activity level, but maybe more than 90% per these costs will be fixed, at least within our one-year planning horizon. By translating these totals to costs per unit, the costing is only valid if the company actually produces (and sells) exactly 70 000 Alfas and 30 000 Omegas. Try to see how the costing model changes if you change the production outputs!

- The model does not focus on actual cause and effect! When indirect costs are explained as a factor determined by production activity, the model does not imitate reality as good as it should. The model is based one cost driver (production activity), which is 100% volume-based. The actual underlying reasons for the various administrative cost to occur are not picked up by the model:
    - Indirect production costs for the two products are a function on the number of hours spent in production, rather than other relevant cost drivers in the production environment.
    - The actual cost drivers in the production department can be linked to activity areas such as procurement, logistics and warehousing, production planning, production start-up and quality assurance.
    - Sales and administration costs for the two products are a function of a production value where the indirect costs are already included, based on production time as the activity indicator.
    - The actual costs drivers in the sales and administration departments can be linked to activity areas such as amount of customer support, sales representative costs such as traveling and bonuses, accounting and finance complexity and various management tasks.

If the costing model should emulate reality as much as possible, we should also look for the cause and effect relationships that prevail in real life. Simplifications may influence the validity of the costing model. The more we know about the actual drivers of cost, the more accurate the costing model will be, particularly when we analyze different products.
In Activity Based Costing we learn how to design costing models with more than one cost driver.

Notes:

# Session no. 6 – Activity Based Costing

**Study week no. 6:**
Class Thursday February 12, 2020 14:00-16:45
Seal, Rohde, Garrison and Noreen: Chapter 9
Video: Activity Based Costing step by step

## 6.1 Business processes and activities

A large part of the indirect costs are salaries and other personnel costs, related to managers and employees being involved in various business processes. If we should understand the indirect costs better, we need to know more about what people actually are doing, and the link between these activities and the costs that occur.
We need to monitor the activities carried out and find the corresponding costs for these. The activity or group of activities now become the cost objects, and we can start asking questions such as:

- How much does it cost us to handle one incoming invoice?
- How much do we spend in recruiting and training employees?
- How much do we spend on quality control?
- How much does it cost us to support one customer group compared to another?

## 6.2 Calculating activity rates and allocating activity costs

Activity Based Costing is a two-step model; first we find out how much it cost us each time we carry out a given activity, then we use this information to analyze another cost object, such as a product or service that we offer to the market.

Activity costs: This are the total costs related to a given activity or activity group over a given period.
Example: A chocolate factory has a small team that carries out various quality control tasks during production of the chocolates. In 2019 the budgeted costs for this team is kr. 680 000.

Activity frequency: How often the activity is carried out during a given time period, for instance a year.
Example: We are analyzing costs of the activity group quality control. The activity frequency describes how many times such controls are done over a given period, for instance 400 times.

Activity rate: What are the cost each time the activity is performed? We find this by dividing the activity cost by the activity frequency.
Example: The company plans to carry out 400 quality controls in 2019. The variable costs for these are kr. 80 000, while salaries and other fixed costs for the personnel involved is kr. 600 000 per year. The variable activity rate is 80 000/400 = 200 per control and the fixed activity rate is: 600 000/400 = kr. 1 500 per quality control.

Allocation to object: The next step is finding the activity frequency that pertains to the cost object(s) we are analyzing:
Example: If we plan to conduct 30 quality controls in 2019 for Chocolate X, the allocated costs will be (30 * 200) + (30 * 1 500) = 51 000
The remaining costs, (680 000 – 51 000 = 629 000) relate to other objects than Chocolate X!
If we produce 100 000 units of Chocolate X each year, each of these shall cover 51 000/100 000 = 0.51 of the total costs of quality control that the company has.

In Activity Based Costing the activity rates are average figures, they represent how much an activity costs on average each it is performed. In some cases, the activity costs and activity frequencies vary and it is therefore necessary to analyze also the *deviation* in the activity rates.
The average activity rate for the above quality controls is kr 1 500 per quality control, but variances may occur, and we may conclude for instance that in 90% of the cases quality control costs are within the range of kr 1 400 to kr 1 600.

## 6.3 Cost drivers in an ABC-model

Activity Based Costing (ABC) adds two new aspects to costing:

- We will be able to determine if costs vary with production volume or with other more structural factors (varying degrees of variability) – such as activities caused by how we have organized production (serial based activities) or the scope and complexity of our products (product based activities).
- We can focus more on actual cause and effect relationships, and limit the analysis to allocating costs to the cost object that this object actually causes. We can then determine relevant mechanisms that also may help us to gain a better understanding and control over costs.

Because the ABC model is focused on explaining why costs occur, we need to determine the cost drivers on an activity level; the underlying factor that explains cost. According to the ABC model, these activity-related cost drivers can be grouped in *four different groups*:

1. The volume based activities are performed each time a unit of the product is produced. As a simplification it is often assumed that the costs vary proportionally by the production volume. Production labor, material, machinery and electricity costs are typical volume based activities.

2. The serial based activities are performed each time a production series are performed, regardless of how many produced units that the series consists of. Typical examples are machinery set-up and calibration, procurement and some logistical activities.

3. The product based activities are influenced by the number of various products that the company produces, regardless of production volume and series. Typical examples are production planning and product improvements.

4. In addition to these three types of activities and corresponding cost drivers we have facility based activities; activities and activity costs caused neither by production volume, nor the organization of production series and by our product diversity.
    - In these cases, we will find it difficult to find any relationship between what we do and what it costs us; there are no obvious cause and effect relationships.

- In Activity Based Costing we focus on costs that can be linked to a cost driver and therefore we may keep the facility-based costs out of the costing model. The facility-based costs are often the most unavoidable of the fixed costs and will therefore not be decision relevant anyway.

Serial based and product based cost drivers are often referred to as *structural cost drivers* (as opposed to the volume based cost drivers).

Finding the actual cost drivers may sometimes prove difficult - what are *the real factors* that determine the level of costs?
An example: An IT support desk registers the number of support jobs and the company is therefore capable of calculating the average cost for each support job. It is probably not correct that the number of support jobs is the actual cost driver. Why do employees contact IT support in the first place? The underlying reasons for IT support costs to occur may be employees' lack of general IT competence, various bugs in the software, lack of user manuals or hardware problems.
If the company wants to reduce the costs for IT support, they should therefore look at the real factors that determine these costs. Training, making a list of frequently asked questions and better maintenance routines can contribute to keeping future IT support costs low.

## 6.4 Exercises

**Exercise 9**

Futurum AS manufactures two products, Delta and Electra. Electra is the most complex of the two and requires direct material for kr 240 per unit of finished product, while Delta requires direct material for only kr 100 per unit. The direct labor rate is kr 200 per hour and it takes on average 30 minutes of work to produce a Delta and one hour to produce an Electra.

The budgeted indirect production costs, which are regarded as variable, are kr. 5 000 000 in 2020 and the budgeted sales and production volume in 2020 is 60 000 units of Delta and 10 000 units of Electra. The sales and administration costs are regarded as fixed costs and are not allocated to the cost objects.

a) Present a costing model for one Delta and one Electra, based on the above information.

As an alternative to this simplified costing model, Futurum AS plans to introduce Activity Based Costing. The activities in the Production Department, can be grouped in four groups; Procurement, Machine Calibration, Production and Maintenance.
Based on a study of these activities, the company has found out that there is a relationship between activities, the frequency and costs as follows:

| Activities | Activity costs | Cost drivers | Budgeted frequency | Product Delta | Product Electra |
|---|---|---|---|---|---|
| Procurement | 435 000 | No. of orders | 600 | 500 | 100 |
| Machine calibr | 2 000 000 | No. of calibrations | 2 000 | 800 | 1 200 |
| Production | 1 040 000 | No. of machine hours | 13 000 | 3 000 | 10 000 |
| Maintenance | 1 525 000 | No. of maintenance jobs | 2 000 | 860 | 1 140 |
| | 5 000 000 | | | | |

b) Present a costing model for one Delta and one Electra, based on the ABC-information above and compare your findings with those under question a)

**Exercise 10**

In the little Swiss village Waldteufel, you will find the small family-owned chocolate factory Alpenmilch, established in 1913. After a downsizing process, the company has decided to produce only three products from January 2020 onwards:

- The 100-gram milk chocolate bar, called *Schneewittchen*
- The 100-gram 50% cocoa dark chocolate with hazelnut bar, called *Edelweiss*
- The 100-gram 70% cocoa dark chocolate with roasted fruits and chili, called *Matador*

These products are not produced simultaneously, but one product at a time in a given production series. A standard production series for all three products is 1 000 kilos of finished product (10 000 units of 100-gram chocolate). The cost objects in the further analysis are one series of each of the three products. The company has so far used a traditional costing model, where the indirect production costs are allocated to the three products using expected production time as cost driver for the allocation rate used.

We have the following data from the 2020 budgets:

| | **10 000 units of 100-gram Schneewittchen** | **10 000 units of 100-gram Edelweiss** | **10 000 units of 100-gram Matador** |
|---|---|---|---|
| Planned production 2019 | 800 production series | 500 production series | 200 production series |
| Direct labor rate per hour | CHF 25.00 | CHF 25.00 | CHF 25.00 |
| Standard production time | 80 hours | 120 hours | 140 hours |
| Direct material costs | CHF 2 400 | CHF 2 600 | CHF 3 200 |
| Packaging costs | CHF 600 | CHF 600 | CHF 600 |

The total planned production in 2020 is therefore (800 * 10 000) + (500 * 10 000) + (200 * 10 000) = 15 000 000 100-gram chocolates.
The budgeted indirect costs for 2020 in cost center Production are CHF 1 216 000, excluding facility costs, which are treated as non-assignable costs.

The company has negotiated sales prices for 2020 with the two Swiss distributors Migros and COOP as follows:

| | |
|---|---|
| Schneewittchen | CHF 0.80 per unit |
| Edelweiss | CHF 1.00 per unit |
| Matador | CHF 1.00 per unit |

The total budgeted sales income in 2020 is therefore (800 * 10 000 * 0.80) + (500 * 10 000 * 1.00) + (200 * 10 000 * 1.00) = CHF 13.4 mill.

<u>Question a)</u>
Present a costing model for each of the two products showing budgeted production costs for each standard production series as well as production costs for each unit of 100-gram chocolate.
You should also show how much is left in the 2020 budgets to cover facility costs, sales and administration costs as well as profits.

The company wants to replace the current calculation model with a more sophisticated one and has started to analyze the how the different production activities consume resources that together makes up the total assignable indirect production costs of CHF 1 216 000. An external consulting firm was brought in to analyze activities and processes and their report concludes with the following picture of the activity costs:

| Activities | Activity costs | Activity frequency Schneewittchen | Activity frequency Edelweiss | Activity frequency Matador |
|---|---|---|---|---|
| Machine calibration | CHF 420 000 | 220 adjustments | 180 adjustments | 300 adjustments |
| Procurement | CHF 240 000 | 120 purchases | 120 purchases | 160 purchases |
| Production | CHF 256 000 | 2 800 machine hours | 4 000 machine hours | 6 000 machine hours |
| Maintenance | CHF 300 000 | 120 service jobs | 160 service jobs | 220 service jobs |

The activity frequency above refers to how many times it is expected that the activities are carried out for the whole planned production in 2020.
We may assume that all of the indirect production costs are fixed in this one-periodic cost analysis.

Question b)
Revise your costing models with the new information from the activity studies. Comment on the differences and explain why Activity Based Costing may contribute to giving managers better support for their decisions.

Notes:

# Session no. 7 – Costs of excess capacity

**Study week no. 7:**
Class Thursday February 20, 2020 14:00-16:45
Student exercise seminar Thursday February 20, 17:00-19:45
Video: Calculating the costs of excess capacity

## 7.1 Excess capacity

When analyzing the various activities carried out in the organization many companies discover that there is a difference between *budgeted* capacity and *available* capacity.

Example: A procurement function has the capacity to perform 800 purchase orders per year, but the plans and budgets for 2020 indicate that there will probably not be more than 600 actually carried out. The excess capacity will then be 200/800 = 25.0%.

We shall now see that we, under three given assumptions, can calculate what this costs us.

## 7.2 When is excess capacity a cost?

Excess capacity is a cost we can calculate, if these three assumptions are met:

1. Excess capacity actually prevail. Excess capacity is only relevant when actual utilization is lower than the available capacity. Excess capacity can then be expressed as the difference in activity frequency, between how many times we have the capacity to perform the activity during a specific period, and how many times we expect the activity to actually be performed.

2. The activity costs are fixed. If the activity costs are considered to be fixed, the total costs will remain the same, regardless if we utilize the capacity efficiently or not, and therefore a part of the cost relates to what we are doing and the rest of the cost to what *we are not doing*. If the activity costs are variable, the total costs will vary with the activity frequency. When the activity is performed less frequently, the level of costs will drop accordingly. In this case will excess capacity (if any) not cost us anything!

3. We have no alternative ways of utilizing the resources that are currently used.
   Example: If we have a procurement function with 25% excess capacity, can the personnel involved in this function also work for other departments in the company when procurement activities are low? If not, there is an excess capacity with an immediate cost.

## 7.3 Calculating the costs of excess capacity

Because costs of excess capacity are only relevant for fixed costs, we need to split the relevant activity costs in a variable and a fixed part, and calculate variable and fixed activity rates:

- The variable activity rate: Variable activity costs/*actual* activity frequency
- The fixed activity rate: Fixed activity costs/*available* activity frequency

An example: A procurement function has budgeted costs of 800 000 in 2020, of which 80 000 are assumed to be variable. The budgeted number of purchase orders are 600, while available capacity is 800. What are the costs for utilized and excess capacity?

- Activity rate for variable costs: 80 000/600 = 133.33 per order
- Activity rate for fixed costs: 720 000/800 = 900.00 per order
- Cost for excess capacity: 200 * 900 = 180 000
- Cost for utilized capacity: 800 000 – 180 000 = 620 000 (which equals fixed costs of 600 * 900 = 540 000 + the variable activity costs of 80 000).
- The fact that we are not able to utilize the capacity in the best possible way costs us 180 000, which equals 22.5% of the total costs in this activity group

### 7.4 How can we reduce the costs of excess capacity?

In Activity Based Costing is not common to allocate costs for any excess capacity to the cost objects. This is because there is no cause and effect relationship between these costs and the objects; the costs for excess capacity is the costs for what we don't do, but we are concerned about allocating costs for what we actually do.
An example: If BI is going to analyze the profitability for the different Bachelor Programs, it would not be justifiable to let the BBA program cover costs for the vacant seats in the auditorium, because it is not the BBA Program's fault that BI is unable to fill up the class room.

Most companies need to have some excess capacity, to make it possible to plan for future growth. This is a strategic decision in the infrastructural perspective (more about this later); we must make sure that we have sufficient (but of course not too much) administrative and production capacity. We can therefore say that costs of excess capacity equals the cost of flexibility for the company.

In many cases, it is unrealistic to assume that excess capacity is just a short-term adaptation problem and that companies can plan their way out of excess capacity situations:

> There will for instance be vacant seats in BI's classrooms also 10 years from now and British Airways will most probably not be able to fill up all the seats on all of their flights in year 2030.

On the other hand, if we in the foreseeable future are not able to utilize excess capacity, we have a cost that we must try to reduce. By calculating the costs of excess capacity, we get excess capacity issues on the agenda, and we may also be able to see in which activity areas we have potentials for saving money first.

In general, there are three different strategies that may contribute to reducing costs for excess capacity:

1. Plan for growth: Then there will most likely be an increase in future activity frequency that will help on the long run to cut costs for excess capacity.

2. Try to make fixed costs variable: If we are able to make all or parts of the activity costs variable, we avoid the costs of excess capacity.
   Example: If a chocolate factory has its own delivery vans, an alternative is to outsource the transport function to an external supplier. The company will then pay for the services actually rendered, and costs change from being fixed to being variable.

3. Find alternative uses for the resources that are in excess: Can we create a higher degree of organizational flexibility? Can we produce for other companies, even our competitors? Can we share costs for research and development?

### 7.5 Implementing Activity Based Costing

Not all companies that have tried to implement ABC have been able to utilize the model good enough, and many have therefore concluded that ABC look better on a piece of paper than in real life. At least three arguments speak in favor though of logging the use of resources on an activity level, so we can understand more about activity costs and how to allocate them to the relevant costs objects:

1. We focus on finding actual cause and effect relationships by defining cost drivers on an activity level, not only on an overall business level.
2. The will see that the variability of costs can be related to structure, for instance the complexity of the product range, as well as the organization of the production (long or short production series).
3. We can make models that enables us to analyze costs of not being able to utilize our capacity ideally (Porter and Riley both list utilization of capacity as a generic cost driver)

The disadvantage is that the more sophisticated models we make, the more *detailed information* we need to gather and analyze along the way. It is normally not possible to log the activities without employees writing detailed time sheets and report how they complete a day's work.

- In some industries this mandatory because of legal requirements, and companies that invoice their services according to actual time consumption may use manual or digital systems for logging the work carried out by the employees.
- But in many organizations, for instance in academia or parts of the public sector, a change in *organizational culture* must take place before the employees start logging their actual activities each working day!

There are also three other challenges in the ABC model that can be difficult to overcome:

1. The IT systems must be programmed to keep track of the actual activities and report back in a way that it makes is possible to understand how resources are actually spent.
2. In addition, we still have to live with the fact that most activity costs are fixed and often also unavoidable, at least in a shorter time frame. The assumption that activity costs should be variable is only valid if we look long into the future. The ABC model as such cannot avoid that a large portion of the costs tend to be unavoidable in our planning period.
3. Traditional ABC is based on the assumption that indirect costs vary linearly in relation to the cost driver, but ideally should the models be designed to absorb that activity rates will be influenced by the activity level. In many cases, the activity rate will decrease when activity level increases (economies of scale).

Activity Based Costing is therefore a model that first and foremost is suited for analyzing *parts* of the company's resources, rather than trying to explain everything. The model may help us to find the link between what we do and what is costs us, but our level of ambition should be limited to study mechanisms where we have a possibility to make a change in the short run.

## 7.6 Exercises

**Exercise 11**

A company has total annual activity costs in the activity group *quality control* of kr. 1 600 000, of which 75% are fixed and 25% are considered being variable.
The budgeted activity level is 450 quality controls per year, but this is only 75% of the available (ideal) capacity.
What is the annual cost of the excess (unused) capacity?

**Exercise 12**

AS ABC manufactures the products D and E and there are four activities in the Production Department, relevant for both products. For one unit of D direct material costs of kr. 100 are registered, and for the product E the direct material costs are kr. 240. The standard time consumption is 30 minutes for one unit of D and one hour for one unit of E. The hourly rate for direct personnel costs is kr. 200.
The indirect production costs for 2020 are, according to the budget, kr. 6 500 000. Of these costs kr. 1 460 000 is regarded as production plant costs, which are costs for the premises, depreciation of machines and electricity. The planned production is 60 000 units of D and 10 000 units of E.

The company has recently implemented an Activity Based Costing model, as follows:

| Activities | Activity costs | Cost drivers | Available capacity | Budgeted capacity Product D | Budgeted capacity Product E |
|---|---|---|---|---|---|
| Procurement | 440 000 | No. of orders | 800 | 500 | 100 |
| Calibration | 2 000 000 | No. of calibrations | 2 000 | 600 | 1 200 |
| Production | 1 040 000 | Machine hours | 10 000 | 2 000 | 6 000 |
| Maintenance | 1 560 000 | No. of maintenance jobs | 2 600 | 860 | 1 140 |
| Facility costs | 1 460 000 | N/A | | | |
| Total | 6 500 000 | | | | |

a) Why should the facility costs be left out of the allocation of indirect production costs for Product D and E?

b) Assume that all of the above activity costs are fixed, at least within the relevant time frame for our costing model. Find the ABC costs for one unit of D and E, which includes direct costs and assignable indirect costs.

c) Find the costs for the excess capacity and explain why this is not allocated to the two products.

Assume that AS ABC makes *a revised budget* for 2020, based on new market information. The production volume of Product D will increase and the annual frequency of production related activities will instead be 600 procurement orders, 700 machine calibrations, 3 000 machine hours and 900 maintenance jobs.

d) What are the costs for the excess capacity after the budget revision?

**Exercise 13**

Radioactive AS is currently analyzing their sales and marketing costs by using an Activity Based Costing model. The forecasted costs for sales and marketing in 2020 can be split as follows:

| Activity | Activity costs | Cost drivers | Available capacity | Budgeted capacity utilization |
|---|---|---|---|---|
| Customer meetings | 1 200 000 | No. of customer meetings | 600 meetings/year | 460 meetings/year |
| Other customer support | 800 000 | No. of support hours | 1 200 hours/year | 900 hours/year |
| Complaints and returns | 600 000 | No. of customer complaints | 400 complaints/year | 300 complaints/year |
| Other costs for sales and marketing | 1 400 000 | --- | --- | --- |

a) Calculate the costs of excess capacity in the Sales and Marketing Department of Radioactive AS in 2020 and suggest various strategies to reduce these costs in the future.

Radioactive AS sells its products through *three retailing chains* in Norway and we can gather the following information about the activities pertaining to these:

| | ElektroGiganten | Claes Frantzon | QuickPower | Total |
|---|---|---|---|---|
| Sold number of units | 15 000 units | 9 000 units | 8 000 units | 32 000 units |
| Customer meetings | 220 meetings | 180 meetings | 60 meetings | 460 meetings |
| Other customer support | 500 hours | 300 hours | 100 hours | 900 hours |
| Complaints and returns | 160 complaints | 120 complaints | 20 complaints | 300 complaints |

The average price per sold DAB-radio in 2020 is NOK 1 000 ex VAT (price from Radioactive AS to retailer) and there are no significant variations in the sales prices between the three retailing chains. The sales representatives are paid 4% bonus on sales order values (ex VAT).

b) Comment on how each of Radioactive AS' three customer groups add to the profitability of the company, using relevant information on the sales and marketing costs shown above

**Exercise 14**

The company King Arthur Inc. uses Activity Based Costing (ABC) for its product calculation. In the tables below you will find information related to the four products Marcus, Matthew, Lucas and Brutus, for the budget year 2020.

The company manufactures the products by carrying out a number of activities that can we can group in four different activity groups. Each of the activities in each group share the same cost driver type, but there are also facility-based costs without a known cost driver.

| Activity group | Fixed indirect costs 2020 | Cost driver type | Available capacity in units | Budgeted capacity utilization in units |
|---|---|---|---|---|
| Group 1 | 6 000 000 | Volume-based | 10 000 | 8 000 |
| Group 2 | 2 000 000 | Volume-based | 4 000 | 3 000 |
| Group 3 | 800 000 | Product-based | 8 000 | 6 000 |
| Group 4 | 4 000 000 | Series-based | 20 000 | 16 000 |
| Facility-based activities | 5 000 000 | Not available | | |
| Total | 17 800 000 | | | |

| Product | Direct cost per unit | Production volume, units | Budgeted in Group 1 | Budgeted in Group 2 | Budgeted in Group 3 | Budgeted in Group 4 |
|---|---|---|---|---|---|---|
| Marcus | 2 000 | 2 000 | 600 | 400 | 400 | 1 200 |
| Matthew | 3 000 | 1 600 | 1 400 | 800 | 2 000 | 800 |
| Lucas | 4 000 | 1 200 | 4 000 | 200 | 2 000 | 8 000 |
| Brutus | 8 000 | 400 | 2 000 | 1 600 | 1 600 | 6 000 |
| Total | | | 8 000 | 3 000 | 6 000 | 16 000 |

Question a)
Present costing models for the four products where you include all costs that are relevant in an ABC-based costing model.

Question b)
Calculate the costs for the excess capacity in 2020, specified for each activity group, based on the information above.

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Assume now that the company has the possibility to additionally deliver 800 units of product Matthew, increasing the production volume from 1 600 to 2 400 units.
This additional order will increase the activity frequency in all of the four activity groups and that the budgeted activity will be as follows for product Matthew:

- Activity group 1: 2 100
- Activity group 2: 1 200
- Activity group 3: 3 000
- Activity group 4: 1 200

Question c)
If King Arthur Inc. wants to have a profit contribution of 400 000 from this new order, what is the offered price per unit? Calculate also the change in costs of utilized capacity if this order is accepted.

# Four business cases

**Business Case 1 – Norwegian Banana Import AS**

It is November 2019. Norwegian Banana Import AS is preparing the budgets for 2020 and to help them in this process they have made a forecast for 2019. The company expects to go break-even, based on the following assumptions:

| | |
|---|---|
| Sales volume | 700 000 kg bananas |
| Average sales price | 6.00 kr per kilo |
| Cost of goods sold | kr 2 625 000 |
| Salaries and other personnel costs | kr 1 100 000 |
| Payable operational costs | kr 375 000 |
| Depreciation | kr 100 000 |

**Question 1**
What is expected net cash flow for 2019, based on the information you have in the forecast? You may disregard the effect of Value Added Tax (VAT).
Are there other accounting data that the company should analyze, which also will have an impact on the net cash flow than those from the above income statement?

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The company is not satisfied with the expected financial outcome for 2019 and has a growth strategy for the period from 2020-2023. The banana market is competitive and it does not seem to be possible to increase sales without cutting the price. With a highly flexible demand, the sales increase is expected to be significant when prices are only slightly reduced.
The company faces two scenarios:

<u>Scenario 1</u>
Sales price is cut to 5.60 per kilo, sales volume increases by 30% and all payable salaries, personnel and operating costs increase by 5%. The costs per kilo of goods sold and depreciation remain unchanged. There is no change in inventory during 2020.

<u>Scenario 2</u>
Sales price is cut to 5.20 per kilo, sales volume increases by 60% and payable salaries and personnel cost increase to kr 1 500 000 and payable operating costs to kr 500 000.
In addition, the company has to invest in a new delivery van, which will cost kr 300 000, is depreciated over 10 years and will in addition entail financial costs the first year of kr 15 000.
Other fixed assets are depreciated according to plan. Also in this scenario, there is no change in inventory during 2020.

**Question 2**
Show with relevant calculations what is the most profitable alternative for Norwegian Banana Import AS for 2020.

We can gather the following figures from the audited balance sheet per 31.12.2018 and expected balance sheet per 31.12.2019:

| | 31.12.2018 | 31.12.2019 |
|---|---|---|
| Company cars | 420 000 | 320 000 |
| Accounts Receivable | 240 000 | 305 000 |
| Other short-term claims | 60 000 | 0 |
| Bank deposits | 406 000 | 454 000 |
| Total assets | 1 126 000 | 1 079 000 |
| | | |
| Share capital | 100 000 | 100 000 |
| Retained earnings | 173 000 | 173 000 |
| Long-term liabilities | 218 000 | 198 000 |
| Accounts Payable | 286 000 | 296 000 |
| Other short-term liabilities | 349 000 | 312 000 |
| | 1 126 000 | 1 079 000 |

**Question 3**
How much does the company expect to be paid from the customers in 2019 and how much will be paid to suppliers (of both goods and services)? You may disregard the effect of VAT.

**Question 4**
Assume that the customers pay on average after 30 days and that the company's suppliers (of both goods and services) are paid after 30 days.
Based on the figures you have calculated for the first scenario in 2020, what is the expected balance of Accounts Receivable and Accounts Payable per 31.12.2020?

**Question 5**
Norwegian Banana Import AS wants to improve is liquidity by trying to get the customers to pay faster. Based on the figures you have calculated for the first scenario in 2020, how will incoming cash flows improve if customers paid on average after 15 days instead of 30%? You may disregard the effect of VAT and assume that sales is evenly distributed throughout the year.

**Question 6**
The bank deposits are expected to increase by 48 000 during 2019, in spite of the expected break-even profits. Explain this change with a suitable model and specify the various sources for this change.

**Business Case 2 – PowerBox Inc.**

The company PowerBox Inc. in the U.S. state Nebraska manufactures a pocket size charger for car batteries. Unlike other battery chargers that requires a power cord to function, the PowerBox is charged in advance and stores electrical power for many weeks, which comes in handy when a car owner needs to charge a battery away from home. Instead of calling a towing service, the car owner can jump-start his car using PowerBox, and is back on the road again within a minute or so.

The inventors of this technology expect many different uses for such storage of electrical power, but the owners of PowerBox Inc., who has licensed the technology for car battery chargers only, have limited sources of funding and have to concentrate on this small niche in the market, at least in the near future.

PowerBox Inc. expects the income statement for 2019 to look as follows:

| | |
|---|---|
| Sales income (1) | $ 2 600 000 |
| Production costs (2) | $ 910 000 |
| Royalty paid to inventors of technology (3) | $ 130 000 |
| Sales and marketing costs (4) | $ 720 000 |
| Administration and other overheads (4) | $ 680 000 |
| Finance costs (4) | $ 70 000 |
| Forecasted profit 2019 before taxes | $ 90 000 |

(1) Expected sales and production 100 000 units
(2) Of which 70% is considered variable costs
(3) 5% of sales income, according to a five-year agreement from year 2017
(4) Regarded as fixed costs

PowerBox Inc. expects the balance sheet per December 31, 2019 to look as follows:

| | |
|---|---|
| Production machinery and tools (1) | $ 290 000 |
| Company cars (2) | $ 100 000 |
| Inventory | $ 320 000 |
| Accounts receivable (3) | $ 440 000 |
| Bank deposits | $ 180 000 |
| Total assets | $ 1 330 000 |
| | |
| Share capital | $ 50 000 |
| Retained earnings | $ 130 000 |
| Long-term liabilities (4) | $ 440 000 |
| Accounts payable (4) | $ 450 000 |
| Other short-term liabilities (4) | $ 260 000 |
| Total equity and liabilities | $ 1 330 000 |

(1) Annual depreciation $ 30 000
(2) Annual depreciation $ 30 000
(3) No provision for bad debts
(4) No payback to creditors planned for 2020

(5) All payable within the end of 2020, including corporation tax of $ 30 000 for fiscal year 2019 (corporation tax for 2020 is paid in 2021)

So far, PowerBox Inc. has concentrated on the US domestic market, predominately the coldest states where winter temperatures challenge car batteries. According to the company's strategy plan for 2020-2023 the company has decided to enter the Canadian market and to have success there before the end of the planning horizon. Parallel to that, the growth in the US market shall continue steadily. The question is therefore if it is possible to do both in 2020.

When the activity plans for 2020 are discussed, three alternative scenarios are presented to the management:

| Scenario | Sales US | Sales Canada | Sales price per unit | Variable costs (1) | Fixed costs | New investments (2) |
|---|---|---|---|---|---|---|
| No. 1 | 110 000 units | 0 units | $ 24.00 | Production costs per unit unchanged | 5% increase | None |
| No. 2 | 130 000 units | 30 000 units | $ 20.00 | Production costs per unit decreases with 3% | 10% increase | $ 180 000 |
| No. 3 | 150 000 units | 60 000 units | $ 17.00 | Production costs per unit decreases with 6% | 15% increase | $ 330 000 |

(1) Cost structure variable vs. fixed costs same as in 2019
(2) New investments depreciated linearly over three years

Question a)
What is the most profitable of the three scenarios? Present your conclusion with the necessary supporting calculations.

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Let us assume that PowerBox Inc. chooses scenario 3 and that consequences of this highly expanding growth policy are that:

- Inventory balance increases with 30% during 2020
- Accounts receivable balance increases with 40% during 2020
- Accounts payable balance increases with 40% during 2020
- Other short-term liabilities increase with 30% during 2020

Question b)
Use a cash flow forecasting model to present the expected balance of bank deposits at the end of 2020. Comment on your conclusions. If you conclude that cash reserves seem to be insufficient at the end of 2020, suggest alternative measures to improve the situation.

**Business Case 3 – Diginova AS**

In November 2019 two BI-students, who are only one semester away from their graduation, decided to establish the company Diginova AS. The company will formally be founded January 2, 2020 with a share capital of NOK 100 000, and the two investors will each sign up for 50% of the shares. Diginova's business plan was finalized before Christmas and the initial purpose of the company is to act as Norwegian distributors for the Japanese company Nagoya Electronics Inc. This company launched at the electronics fair in Dubai in October 2019 a low-priced car stereo system with integrated Wi-Fi that can be connected to all major car stereo systems as an external upgrade. CarNet, which is the name of this attractive product, consists of a touch screen and a receiver with wireless connection. In the receiver, there is a SIM card that facilitates Internet connection and the product comes with many applications for web browsing, music streaming, satellite navigation, traffic and tourist information and more.

Diginova's two founders read about the product, contacted Nagoya Electronics' Marketing Manager for Europe, and met with her in Frankfurt shortly after the product launch. When the terms and conditions of this distribution deal were finalized, Diginova AS started to convert the business plan and strategies for 2020 to a financial plan, with the purpose of both analyzing the financial outcome of the plans, as well as the need for external capital in this tough start-up period.

In December 2019, the major concern was to gain acceptable control over financial risks for the first six months of 2020. During the spring of 2020, the company has hopefully gained more experience that would make further planning easier. Therefore, first step was to make a Master Budget and a Cash Flow Budget for the period from January through June 2020, and the two founding owners turned to you and asked for your advice and assistance since they had heard that you were particularly competent in budgeting and financial simulation.

You accepted their invitation and you soon found that there was a lot of information in the business plan that would be relevant to interpret for the financial planning for the first half of 2020:

- The agreed purchase price per unit was JPY 17 000. The official exchange rate per 14th November 2019 equaled 100 JPY = 5.83 NOK. To be on the safe side, you decided to use an exchange rate of 100 JPY = 5.90 NOK.

- The minimum order quantity is 2 000 units and you decided to plan for orders of 2 000 units each time shipments were needed. The goods travel by plane and the freight from Japan to Norway amounts to NOK 6 000 for a 2 000-unit shipment. Diginova will pay for the goods and freight in advance, when the products are ordered.

- There is an import duty of 25% of the goods' value including the freight costs, (due to the nature of the goods and the country of their origin), payable immediately in the customs clearance process when the goods arrive at the Norwegian border.

- In addition, there is a 25% value added tax on the goods' value including freight costs and import duties. This VAT is deductible as import VAT when the VAT is reported bi-monthly to the tax authorities. The VAT terms (which can go in both the company's favor and disfavor) are 10th April for January and February and 10th June for March and April.

- The goods will be sold through three different channels; the retail chains Elkjøp and Power, as well as the Internet store Komplett.no. Sales volumes are uncertain as none of these three

companies are willing to commit to fixed orders, but the sales budget suggest the following *sales volume in units*:

| | January | February | March | April | May | June |
|---|---|---|---|---|---|---|
| Elkjøp | 200 | 300 | 400 | 400 | 500 | 600 |
| Power | 100 | 150 | 200 | 200 | 250 | 300 |
| Komplett | 140 | 200 | 320 | 350 | 350 | 500 |
| Total | 440 | 650 | 920 | 950 | 1 100 | 1 400 |

- Payments from customers are expected to be done after 30 days from invoicing and you can for the sake of simplification assume that all months have 30 days and that the sales are distributed evenly throughout the months.

- From January onwards the two owners will have a monthly salary of NOK 25 000 each. You must accrue for 12.0% holiday pay and 14.1% employers' contribution to the social security system (on both salaries and accrued holiday pay). Social security is paid bi-monthly, on 15th March for January and February and 15th May for March and April. The holiday pay will first be paid in June 2021, and we don't pay the social security for this before the holiday pay is actually transferred to the employees (the accrued social security for the holiday pay is a short-term liability during year 2020)

- There will be other operating costs of NOK 12 000 per month from January through March and NOK 18 000 from April through June. You may assume that these costs are paid for the same month they occur and that they are fully VAT deductible.

Question a

The above sales figures are based on a sales price to end customer of NOK 2 190 incl. 25% VAT. Elkjøp, Power and Komplett all have a 30% mark-up (profit on top of their own purchase price) on prices ex VAT from Diginova.
Would the company have a sufficient profitability based on these assumptions and the information above? Support your conclusion with the necessary budget simulations.

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The share capital of NOK 100 000 will not be sufficient to fund the operations from day one, but luckily the company has the possibility to borrow money from one of the owners' close family members. This person needs to know already in the end of December how much money he needs to come up with.

Question b

When is it necessary for Diginova to borrow money and how much external funding is then needed? Will the company be able to pay back some of this private loan within end of June?
Support your conclusions with the necessary cash flow projections.

**Business case 4 – Belgravia Medial Centre Ltd.**

In London's West-End, you find the private hospital Belgravia Medical Centre, established in 1994. The hospital's five main departments are:

- Accident and Emergency (treatment of acute problems)
- Surgery and post-operative unit
- General Health Care
- Medical Support (laboratories, x-ray radiology, cardiology, MR and CT Scanning, pharmacy and various medical equipment)
- Administration (management, finance and accounting, ICT, marketing, customer service and customer booking)

We shall in this case focus only on one particular service, the *Annual Health Check Programme*, offered by the General Health Care Department. This department is split in four sub-groups:

- Paediatricians
- General Practitioners
- Specialists
- The Annual Health Check Programme

The terms and conditions of the Annual Health Check Programme are as follows:

- Members of Belgravia Medical Centre can, instead of paying the annual membership fee of £ 89.00, pay £ 298.00 and get one annual comprehensive medical check-up in addition to the membership.
- The average time for each consultation is 45 minutes and with a 15-minute break between patients and a one-hour lunch break, each medical doctor can handle seven patients per day.
- In addition to a 45-minute consultation, the subscribers to the Annual Health Check Programme get services carried out by the Medical Support Department, such as blood tests and cardiography. These services take on average 30 minutes to render.

In 2020, the hospital expects to have 7 000 subscribers to the Annual Health Check Programme. We have some additional information from the financial planning for 2020:

- The eight medical doctors that are involved in this program are on employment contracts where they are obliged to work 160 days per year. Their annual salaries including National Insurance Contribution and other social costs are £ 160 000 each.
- The Annual Health Check Programme is invoiced for a portion of the costs for the premises of the Medical Centre. For 2020 there are total costs of £ 1 200 000 to be split according to the actual use of square feet of office space. The Annual Health Check Programme currently uses 4 000 of a total of 120 000 square feet.
- The Annual Health Check Programme is also invoiced by the Medical Support Department for the services they carry out, including cost for test equipment and other medical supplies. For 2020, the rate is £ 35.00 per patient.
- According to the costing model that the hospital has designed, covers The Annual Health Check Programme only administrative costs in the General Health Care Department, and costs for the Administration Department is therefore not allocated further. The administrative costs in the General Health Care Department is, according to the 2020 budgets £ 702 400, and The Annual Health Check Programme is charged for 20% of these costs.

Question a)
What are the costs per treatment in the Annual Health Check Programme, based on the above information? In your opinion, is the product profitable?

Question b)
What are the costs of excess capacity for the Annual Health Check Programme?

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To reduce some of the costs for excess capacity, Belgravia Medical Centre is looking for new business. The London City-based investment firm Greedy Pain Associates is currently searching for a new supplier of medical services to their 800 employees and Belgravia Medical Centre is now approaching this company with a fixed price offer, based on their product The Annual Health Check Programme.
When making the offer, the company assumes that only 60% of the employees will participate in the program.

Question c)
Assume that Belgravia Medical Centre wants to make £ 80 000 on this new contract. What is the fixed price that the hospital can offer to its new customer? What are the costs for excess capacity after this order is accepted?