3.3 Break-even Analysis

Break-even analysis: A tool that businesses can use to determine how many sales are needed to cover all their costs.

Break-even point: The level of output that generates sufficient revenue to cover total costs without any profit left.

Selling price: The average price paid by the customer for one unit of a product or service.

Variable costs per unit: Costs that vary directly with output. For example, raw materials or components needed to produce one unit of production.

Fixed costs: Costs, such as rent or advertising, that are not directly linked to output and so do not change as output increases or falls.

Contribution per unit: How much a product contributes to covering the fixed costs of a business.

Total contribution: How much the whole product line (all the products/services produced by the business) contributes to covering the fixed costs.

Margin of safety: The difference between the break-even point and the current level of output. It shows how far output can fall with the business still achieving break-even.

$$\text{Profit} = (\text{Output} \times \text{Contribution per unit}) - \text{Fixed costs}$$

Change	Effect on break-even point	Effect on profit	Effect on margin of safety
Increased selling price	Lower	Higher	Higher
Increased fixed costs	Higher	Lower	Lower
Increased variable costs	Higher	Lower	Lower

The main purpose of an income statement is to show the amount of profit or loss that a business has made in a trading period & to assess the profit quality of a business.

An **income statement** is split into three parts:

1. the trading account (gross profit)

2. the profit and loss account (profit statement; operating and net profit)

3. the appropriation account (shows how the net profit is distributed)

	$m
Sales revenue	700
Cost of goods sold	350
Gross profit	350
Expenses	200
Net profit before interest and tax	150
Interest	10
Net profit before tax	140
Tax	25
Net profit after interest and tax	115
Dividends	35
Retained profit	80

Trading Account

Gross Profit = Sales revenue – Cost of goods

Cost of sales = opening stock + purchases – closing stock

How can you improve gross profit?

Use cheaper supplies

Increase sales price

Use marketing strategies

Intangible assets are non-physical items of value owned by the firm that have a lifespan of over a year.

Intellectual property means commercially valuable ideas that have monetary value in the market.

Patents are legal protection given to an inventor of a product to safeguard it from being copied for a specified number of years.

Copyrights is a form of legal protection is given to the producers of literary or artistic works such as music, books, movies, photographs, images, computer software, web pages, audio and art, and safeguards their exclusive right to publish, reproduce, perform, distribute and sell the artistic works.

A **brand** refers to a good or service that is distinguishable in the market due to its unique characteristics that satisfy consumer needs or wants.

Registered trademark is a distinctive mark, sign or symbol that a company or individual uses to identify or brand itself to distinguish itself from competitors, after registration with the relevant government entity.

Goodwill is the intangible value of a company derived from its 'good nature' in business.

Depreciation is the loss in the value of a fixed asset over time.

Profitability ratios

- Gross profit margin (GPM)
- Net profit margin(NPM)

Liquidity ratios

- Current ratio
- Acid test (Quick) Ratio

Efficiency ratios (HL)

- Return on capital employed (ROCE)
- **The stock/ inventory turnover ratio**
- **Debtor days**
- **Creditor days**
- **Gearing ratio**

Net Profit Margin

Shows net profit as a percentage of sales revenue. It is an important ratio as it shows how well managers can control overheads-expenses.

$$\text{Net profit margin} = \frac{\text{Net profit before interest and tax}}{\text{Sales revenue}} \times 100$$

the higher the NPM, the better

Different strategies that can improve NPM

Increase sales revenue – this can be done by raising revenue and reducing the cost of goods sold in order to improve the GPM. A larger GPM will mean more income is available to absorb the operating expenses, thus leaving a larger NPM.

Reduce operating expenses – this can be done by analysing the individual expenses and finding ways to reduce them.

3.8 Investment Appraisal

The **payback period** calculates the length of time that it takes for a capital investment to pay for itself, using the annual net cash flows provided by that investment.

<u>How to calculate payback period:</u>

1. Calculate yearly net cash flow
2. Calculate cumulative net flow using,

   Cumulative net flow = Cumulative net flow in previous year + Net flow of current year

3. Calculate payback period using:

$$Payback\ period = \frac{Amount\ left\ to\ pay}{Net\ cash\ flow\ in\ that\ year} \times 12$$

Using the example above, we found that in Year 3 the cumulative cash flow turned positive. Up to this point, we made $60,000 in Year 1 and $80,000 in Year 2. This together makes $140,000. How much is left to pay of our initial investment? We need another $60,000 to make a total of $200,000. So, using the above formula, we get:

= $60,000 / $120,000 × 12 = <u>6</u> months

So the final answer is 2 years and 6 months

Benefits of Budgeting

Planning – Budgets can help refine long-term plans. They assist management in planning for the future by estimating the financial resources that are needed to complete a particular objective.

Control – Budgets help control a business' activities and allow for better decision making. Managers have to consider the impact on the budget before deciding on a particular course of action, which is important when making decisions. Quite often, a decision depends entirely on the impact it will have on the business' budget. In addition, large investments often have their own budgets to ensure they are as cost efficient as possible.

Measuring performance – A department's or manager's performance can be evaluated by measuring their ability to stay within the budget. This is particularly important when cost control is a key target of the business.

Motivation – A well-constructed budget can help motivate department managers to perform in line with the overall business objective and stay within budget.

Communication – The management of a business can use the budget to communicate to the different departments how much they are expected to spend in order to achieve their objectives. This helps departments to structure their expenditure when implementing strategies to achieve their objectives.

Coordination – Budgets force management to consider the relationship between different departments and to make sure that departmental plans are integrated.