

# DP IB Business Management: SL



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## 3.5 Profitability & Liquidity Ratio Analysis

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## Profitability Ratios

# An Introduction to Ratio Analysis

- Ratio analysis involves **extracting information from financial accounts** to assess **business performance** and answer key questions including
  - Why is one business more **profitable** than another in the same industry?
  - Is a business **growing**?
  - How effectively is a business **using assets and capital** invested?
  - What **returns on investment** are expected?
  - How **risky** is the **financial structure** of the business?

### Information Extracted from the Profit & Loss Account and Balance Sheet for Ratio Analysis

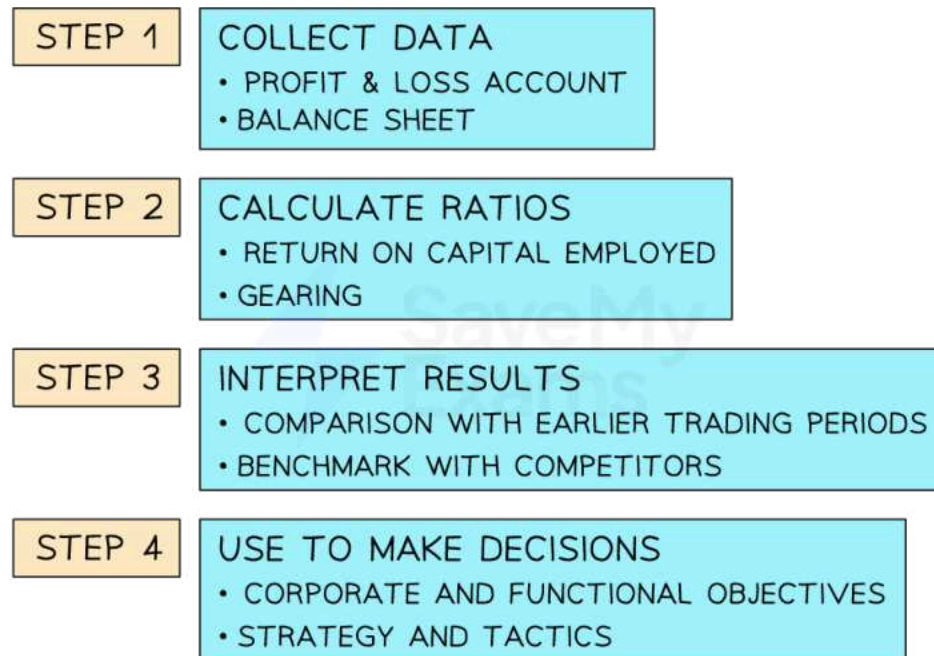
Statement of Profit or Loss	Statement of Financial Position
<ul style="list-style-type: none"> <li>▪ Revenue</li> <li>▪ Cost of Sales</li> <li>▪ Gross Profit</li> <li>▪ Operating Profit</li> <li>▪ Profit for the Year (Net profit)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Current Assets</li> <li>▪ Current Liabilities</li> <li>▪ Inventory (stock)</li> <li>▪ Trade Receivables</li> <li>▪ Trade Payables</li> <li>▪ Long-term liabilities</li> <li>▪ Capital &amp; Reserves</li> </ul>

- Ratio analysis supports evidence-based decision making, as it **provides measurable data** that can be used to **support judgements** and **compare performance** against objectives

## Diagram: the ratio analysis process



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### *The Ratio Analysis Process*

- The three main **profitability ratios** are
  - The Gross Profit Margin
  - The Profit Margin
  - Return on Capital Employed (RoCE)
- The two main **liquidity ratios** are
  - The Current Ratio
  - The Acid Test Ratio

## Profit Margins

- A profit margin measures the **proportion of revenue that is converted into profit**
- Profit margins can be **compared to previous years** to better understand business performance
  - **Higher and increasing profit margins are preferable**, as it means that more revenue is being converted to profit

## Gross profit margin

- This shows the **proportion of revenue** that is turned into gross profit and is expressed as a percentage
  - It is calculated using the formula below

$$\frac{\text{Gross Profit}}{\text{Sales Revenue}} \times 100$$



### Worked Example

Head to Toe Wellbeing's revenue in 2022 was £124,653. Its gross profit was £105,731.

Calculate Head to Toe Wellbeing Ltd's Gross Profit Margin in 2022. [2]

**Answer:**

**Step 1: Substitute the values into the formula**

$$\frac{\text{Gross Profit}}{\text{Sales Revenue}} \times 100$$

$$= \frac{£ 105,731}{£ 124,653} \quad [1 \text{ mark}]$$

$$= 0.8482$$

**Step 2: Multiply the outcome by 100 to find the percentage**

$$0.8482 \times 100$$

$$= 84.82\% \quad [1 \text{ mark}]$$

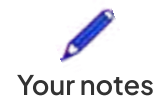
84.82% of Head to Toe Wellbeing's revenue was converted into gross profit during 2022

## Profit margin

- The **Profit Margin** shows the proportion of revenue that is turned into profit before interest and tax
- It is calculated using the formula below and is expressed as a percentage

$$\frac{\text{Profit before Interest \& Tax}}{\text{Sales Revenue}} \times 100$$





## Worked Example

Head to Toe Wellbeing's revenue in 2022 was £124,653. Its profit before interest and tax was £65,864.

Calculate Head to Toe Wellbeing Ltd's Profit Margin in 2022. [2]

Answer:

**Step 1: Substitute the values into the formula**

$$\frac{\text{Profit before Interest \& Tax}}{\text{Revenue}} \times 100 = \frac{\text{£ } 65,864}{\text{£ } 124,653} = 0.5284 \text{ [1 mark]}$$

**Step 2: Multiply the outcome by 100 to find the percentage**

$$0.5284 \times 100$$

$$= 52.84\% \quad \text{[1 mark]}$$

In 2022 52.84% of Head to Toe Wellbeing's revenue was converted into profit before interest and tax.

## Return on Capital Employed

- The Return on Capital Employed is also known as the **Primary Ratio**
- It compares the **profit** made by a business to the amount of **capital invested** in the business
- It is a measure how **effectively a business uses the capital invested** in the business **to generate profit**
- Return on Capital Employed is a **key performance indicator** that can be **compared over time** and also with **competitors** and **other potential capital investments**
- Return on Capital Employed is expressed as a percentage and can be **calculated using the formula**

$$\text{Return on Capital Employed} = \frac{\text{Profit before interest \& tax}}{\text{Capital Employed}} \times 100$$

- **Capital employed** is usually provided for you
- If required, it is calculated using the formula

$$\text{Capital Employed} = \text{Non-current Liabilities} + \text{Equity}$$



## Worked Example

The table shows an extract from the company accounts of *Keals Cosmetics*.

Non-current Liabilities	£1.5 million
Revenue	£7 million
Equity	£15.4 million
Profit before Interest & Tax	£2.2 million

Calculate Keals Cosmetics' Return on Capital Employed. [3 marks]

**Answer:**

**Step 1: Calculate the capital employed**

$$\text{Capital employed} = \text{Non-current Liabilities} + \text{Equity}$$

$$\text{Capital employed} = \text{£ 1.5m} + \text{£ 15.4m} \quad [1 \text{ mark}]$$

$$\text{Capital employed} = \text{£ 16.9m}$$

**Step 2: Divide Operating Profit by Capital Employed**

$$\text{Return on Capital Employed} = \frac{\text{Profit before interest \& tax}}{\text{Capital Employed}} \times 100$$

$$\text{Return on Capital Employed} = \frac{\text{£ 2.2m}}{\text{£ 16.9m}} \quad [1 \text{ mark}]$$

$$\text{Return on Capital Employed} = 0.13$$

**Step 3: Multiply the result by 100 and express the outcome as a percentage**

$$0.13 \times 100 = 13\% \quad [1 \text{ mark}]$$

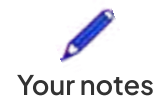
The capital employed in Keals Cosmetics has generated a return of 13%



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## Improving Profitability Ratios

- Businesses aim to improve their profit margins over time



- Whilst **profit margins may fall as a result of external factors** (for example, the cost of raw materials may rise as a result of poor weather damaging raw materials) there are a number of internal steps a business can take to improve its profit margins

## Improving the gross profit margin

- The **gross profit margin** can be improved in two ways
  - They can increase their sales revenue
  - They can reduce their direct costs

### How to Increase the Gross Profit Margin

Method	Explanation
<b>Increase Sales Revenue</b>	<p><b><u>Increase the value of sales</u></b></p> <ol style="list-style-type: none"> <li><b>1. Raise prices</b> <ul style="list-style-type: none"> <li>▪ If costs remain the same, this will improve profitability as the <b>difference between the selling price and costs is now greater</b></li> </ul> </li> <li><b>2. Sell premium products</b> <ul style="list-style-type: none"> <li>▪ If customers are willing to spend money on these goods the business could earn more profit per item sold</li> </ul> </li> </ol> <p><b><u>Increase the volume of sales</u></b></p> <ol style="list-style-type: none"> <li><b>1. Price tactics</b> <ul style="list-style-type: none"> <li>▪ Use price tactics to encourage higher quantity or more frequent purchases                             <ul style="list-style-type: none"> <li>▪ E.g. 'buy one get one half price' doubles the number of items a customer purchases, increasing revenue</li> </ul> </li> </ul> </li> <li><b>2. Increase marketing activities</b> <ul style="list-style-type: none"> <li>▪ Engage in more marketing activities to increase sales volume</li> </ul> </li> </ol>
<b>Reduce Direct Costs</b>	<p><b><u>Reduce variable costs</u></b></p> <ol style="list-style-type: none"> <li>1. This may involve purchasing cheaper/alternative resources, negotiating with suppliers or <b>purchasing in bulk</b></li> <li>2. Businesses must ensure that reducing variable costs will not have an adverse effect on the quality or desirability of products</li> </ol>

3. Buying stock in greater quantities may require investment in increased storage space which will reduce the impact of the cost savings made
- Businesses may also be able to reduce **wastage** of raw materials and components



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## Improving the profit margin

- The **profit margin** can be improved in two ways
  - Increasing the gross profit margin (see above)
  - Reducing overhead costs

### Reduce Overhead Costs

- Reducing staffing levels, relocating to cheaper premises or changing utility companies can reduce expenses
  - Reducing staffing levels may affect staff morale and negatively affect **productivity**
  - **Relocation costs** can outweigh some benefits of moving to a cheaper location
  - Replacing inefficient or outdated equipment may require staff training

## Understanding return on capital employed (RoCE)

- RoCE **differs between industries** so comparison across sectors is not recommended
  - However, RoCE can be compared with other forms of return such as **interest rates on savings in a bank account**, and with other businesses within the **same industry**
- RoCE can be used to support **strategic decisions** (e.g. investment or divestment decisions) to determine the most profitable option given the level of capital employed
- With RoCE **the higher the rate the better** as it indicates that the business is **profitable** and **using its capital efficiently**
  - Investors prefer businesses with **stable and rising** levels of RoCE as this indicates **low-risk growth** is being achieved
  - A ROCE of **at least 20 per cent** is usually a good sign that the company is in a good financial position
- To increase the RoCE level a business can
  - **Increase the level of profit** generated **without introducing new capital** into the business



- **Maintain the level of profit** generated **whilst reducing the amount of capital** in the business



## Worked Example

Faced with increasing costs *Kent & Medway Properties Ltd* is looking to close one of its three high street estate agency branches.

The table below shows some key data for each of the branches.

Branch	Capital Employed	Profit Before Interest & Tax
Sevenoaks	£2.4m	£0.37m
Whitstable	£3.1m	£0.57m
Rochester	£2.9m	£0.51m

Calculate the Return on Capital Employed (RoCE) for each branch and recommend which branch, on profitability terms, should close. [5 marks]

Answer:

### Step 1: Apply the formula to calculate the RoCE for each branch

$$\text{Return on Capital Employed} = \frac{\text{Profit before Interest \& tax}}{\text{Capital Employed}} \times 100$$

$$\text{Return on Capital Employed Sevenoaks} = \frac{\text{£ } 0.37\text{m}}{\text{£ } 2.4\text{m}} \times 100 = 15.42\% \text{ (1 mark)}$$

$$\text{Return on Capital Employed Whitstable} = \frac{\text{£ } 0.57\text{m}}{\text{£ } 3.1\text{m}} \times 100 = 18.39\% \text{ (1 mark)}$$

$$\text{Return on Capital Employed Rochester} = \frac{\text{£ } 0.51\text{m}}{\text{£ } 2.9\text{m}} \times 100 = 17.59\% \text{ (1 mark)}$$

### Step 2: Identify the least profitable branch for closure

Sevenoaks is the least profitable branch with a RoCE of 15.42% and should be the branch selected for closure. (2 marks)



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## Examiner Tips and Tricks

When calculating financial ratios, check that you are using the correct units.

In some cases, financial data is presented as raw figures (e.g. £14,520) but in most cases, you will be working in thousands (£000) or millions (£m).

- Ensure that you convert correctly, e.g. £0.39m is equal to £390,000 and £34.9 (000) is equal to £34,900
- Make sure the decimal place is in the correct place
- Calculate to two decimal places unless stated otherwise



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## Liquidity Ratios

# Ways to Measure Liquidity

- Liquidity refers to the cash and other current assets businesses have available to quickly pay bills and meet short-term business/financial obligations
- The liquidity of a business can be measured using two ratios, the **current ratio** and the **acid test ratio**

## 1. The current ratio

- The Current Ratio is a **quick way** to measure liquidity and the outcome is **expressed as a ratio**
- All of the current asset are included in calculating this ratio
- The current ratio is an effective liquidity measure for businesses that **hold little stock**
- The result indicates how many **£s of current assets** it has available to **cover each £1 of short term debt**
- It is calculated using the formula

$$\frac{\text{Current assets}}{\text{Current liabilities}}$$
$$= ? : 1$$



### Worked Example

*Packer Sports Ltd* has current assets of £15,545, current liabilities of £5,060 and an inventory figure of £8,250.

Calculate *Packer Sports Ltd's* current ratio. [2]

Answer:

**Step 1: Substitute the values into the equation**

$$£15,545 \div £5,060 = 3.07 \quad [1 \text{ mark}]$$

**Step 2: Express the outcome as a ratio**

$$= 3.07:1 \quad [1 \text{ mark}]$$



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In this example, Packer Sports Ltd has £3.07 of current assets to cover each £1 of short-term debt

## 2. The acid test ratio

- The acid test ratio is a precise way to measure liquidity and is **expressed as a ratio**
- The acid test ratio is also known as the **liquid capital ratio**
- The **least liquid** form of current assets (stock) is deducted so the acid test ratio provides a more realistic measure of the businesses ability to **meet short-term debts quickly**
  - It may take some time to sell stock, so it is excluded
- The acid test ratio is a particularly **important measure of liquidity** for businesses that **hold a large amount of stock**
- It is calculated using the formula

$$\frac{\text{Current assets} - \text{stock}}{\text{Current liabilities}}$$
$$= \quad ? \quad : \quad 1$$



### Worked Example

Packer Sports Ltd has current assets of £15,545, current liabilities of £5,060 and a stock figure of £8,250.

Calculate Packer Sports Ltd's acid test ratio. [3]

Answer:

#### Step 1: Subtract stock from current assets

$$£15,545 - £8,250 = £7,295 \quad [1 \text{ mark}]$$

#### Step 1: Substitute the values into the equation

$$£7,295 \div £5,060 = 1.44 \quad [1 \text{ mark}]$$

#### Step 2: Express the outcome as a ratio

= 1.44:1 [1 mark]

In this example, Packer Sports Ltd has £1.44 of the most liquid current assets to cover each £1 of short-term debt



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## Ways to improve liquidity

- The best way to improve liquidity is to **manage the business better**
  - Use **cash flow forecasts** to identify potential cash flow issues before they arise - and take appropriate action
  - **Budget** effectively and consider adopting **zero budgeting** to carefully control spending
  - Set clear **financial objectives** and look for ways to **reduce costs** and **increase income** wherever possible

### Methods to Improve Liquidity

Method	Explanation
<b>Reduce the credit period offered to customers</b>	<ul style="list-style-type: none"> <li>▪ Collecting money owed from customers more quickly will <b>increase the level of current assets</b> in the business</li> <li>▪ <b>Customers may move to competing businesses</b> that offer better <b>credit terms</b></li> </ul>
<b>Ask suppliers for an extended repayment period e.g an extension from 60 to 90 days</b>	<ul style="list-style-type: none"> <li>▪ Current liabilities <b>will not be reduced</b></li> <li>▪ The business can use cash it would have paid to suppliers for other purposes</li> <li>▪ Suppliers may be <b>unwilling</b> to extend credit terms</li> </ul>
<b>Make use of Overdraft facilities or short-term loans</b>	<ul style="list-style-type: none"> <li>▪ Current liabilities will <b>increase</b></li> <li>▪ The business can spend <b>more money than it has in its bank account</b></li> <li>▪ Banks may be reluctant to lend to businesses with cash-flow problems</li> </ul>
<b>Sell off excess stock</b>	<ul style="list-style-type: none"> <li>▪ Less liquid current assets will be reduced and <b>converted into more liquid forms of current asset</b> (e.g. cash)</li> </ul>



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	<ul style="list-style-type: none"><li>▪ Storage and security <b>costs may also be reduced</b></li><li>▪ Stock may need to be <b>sold at a low price</b> to attract sales</li></ul>
<b>Sell assets and lease fixed assets instead (e.g. sale and leaseback)</b>	<ul style="list-style-type: none"><li>▪ Both <b>current assets and current liabilities will increase</b></li><li>▪ The business will continue to <b>have the use of assets</b> but must make regular payments to the leasing company</li></ul>
<b>Introduce new capital and reduce drawings out of the business</b>	<ul style="list-style-type: none"><li>▪ Current assets will be <b>increased</b></li><li>▪ New capital may be <b>introduced by the owner</b> or from <b>additional investors</b><ul style="list-style-type: none"><li>▪ This may result in a <b>dilution of control</b> over the business</li></ul></li></ul>