

Calculating performance indicators - liquidity

Introduction

When a business is deciding whether to grant credit to a potential customer, or whether to continue to grant credit terms to an existing customer, it can analyse the customer's current and past financial statements. This analysis should calculate key performance indicators for three key areas:

- liquidity
- profitability
- financial position and cash flow

In this worksheet we will focus on calculating and interpreting **liquidity** performance indicators. Similar worksheets have also been prepared for profitability indicators and financial position and cash flow indicators.

You may also want to try the two worksheets: *Calculating profitability indicators* and *Calculating financial position indicators*.

Liquidity is a measure of a business's ability to pay its debts as they become due. This is particularly relevant, as a key risk when considering whether to offer credit terms to a customer is that the customer will not be able to pay when the amount falls due.

As part of the decision to grant credit to a customer, a business should obtain copies of the customer's recent financial statements; ideally for the past three years; and calculate liquidity indicators from these figures. These performance indicators can then be compared with the same measures for previous years; acceptable industry standards; or used as part of a credit scoring system.

On the next screen we will look at the formulae for calculating the key performance indicators used to assess the liquidity of a business. We will then calculate these performance indicators to assess the liquidity of a potential customer.

Key liquidity performance indicators

The five key performance indicators generally calculated to assess liquidity are as follows.

Current ratio	$\frac{\text{current assets}}{\text{current liabilities}}$
Quick ratio (liquid capital ratio or acid test)	$\frac{\text{current assets less inventory}}{\text{current liabilities}}$
Inventory holding period	$\frac{\text{inventory}}{\text{cost of sales}} \times 365$

Accounts receivable collection period $\frac{\text{trade receivables}}{\text{sales revenue}} \times 365$

Accounts payable payment period $\frac{\text{trade payables}}{\text{cost of sales}} \times 365$

To explain the calculation of these performance indicators and analyse the liquidity of a business we are going to use some financial information for a business called Delrex Limited. Delrex Limited has approached our business to buy from us on credit. Access the extracts from the financial statements of Delrex Limited for the past three years.

Current ratio

The current ratio is the ratio of current assets to current liabilities; to calculate the current ratio we divide current assets by current liabilities.

How is the formula stated? Click to display/hide the solution.

Current ratio =	$\frac{\text{current assets}}{\text{current liabilities}}$
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The 2010 figures that we need for this calculation for Delrex Limited are shown in the table below with the current ratio for 2010 already calculated. You should now complete the figures for 2011 and 2012 and calculate the current ratio for each of these years. The ratios should be rounded to the nearest one decimal place (for example, 3.26:1 rounds to 3.3:1).

Complete the table and then click to display/hide the solution.

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Current assets	3,900	3,200	2,450
Current liabilities	1,800	1,200	1,150
Current ratio	2.2:1	2.7:1	2.1:1

The current ratio indicates how many times the current assets of a business, in this example Delrex Limited, can cover its current liabilities. This shows how liquid the assets of Delrex Limited are and therefore, how easily it will be able to pay its short-term liabilities as they fall due. What do the above ratios tell us about the liquidity of Delrex over the three year period? Write your answer down, and then click to reveal our suggested analysis.

<p>Explanation</p> <p>Generally a current ratio of 1.5:1 or above is considered acceptable (although it does depend on the type of business). In the case of Delrex Limited the current ratio for its last three financial years has remained fairly constant at over 2:1. This is a good indication that Delrex Limited will have sufficient working capital to cover its short-term liabilities when they fall due.</p>
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Quick ratio

Typically, current assets include inventory, trade receivables and cash. Of these three categories inventory is the one that can least quickly be turned into cash (that is, the least liquid). Removing inventory from the equation will therefore give a more realistic analysis of liquidity.

The quick ratio (acid test) is the ratio of current assets (excluding inventories) to current liabilities. To calculate the quick ratio we divide current assets less inventory by current liabilities.

How is the formula stated? Click to display/hide the solution.

Quick ratio =	$\frac{\text{current assets less inventory}}{\text{current liabilities}}$
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The figures that we need for this calculation for Delrex Limited for 2010 are shown in the table below with the quick ratio for 2010 already calculated. You should now complete the figures for 2011 and 2012 and calculate the quick ratio for each of these years. The ratios should be rounded to the nearest one decimal place (for example, 3.1:1).

Complete the table and then click to display/hide the solution.

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Current assets less inventories	1,900	1,500	1,150
Current liabilities	1,800	1,200	1,150
Quick ratio	1.1:1	1.2:1	1.0:1

So what does this tell us about the liquidity of Delrex Limited? Write your answer down and then click to reveal our suggested analysis.

Explanation
A quick ratio of 1:1 or above is considered to indicate good liquidity for a business. Although the quick ratio for Delrex Limited has improved over the three years from 2010 to 2012, indicating that the business does not have too much of its working capital tied up in inventory. This in turn means that it should be able to pay its short-term liabilities as they fall due.

Inventory holding period

The inventory holding period shows the number of days on average that a business holds inventory. To calculate the inventory holding period we divide inventory by cost of sales and multiply the answer by 365 for the holding period in days, or by 12 for the holding period in months.

How would you state the formula to calculate inventory holding period in days? Click to display/hide the solution.

Inventory holding period	$\frac{\text{inventory} \times 365}{\text{cost of sales}}$
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The inventory holding period will vary dramatically depending on the type of business; a fruit and vegetable wholesaler should have a short inventory holding period as no one wants to buy mouldy fruit and vegetables! However, a luxury car manufacturer will hold inventory for a much longer period of time.

Holding inventory for longer periods than necessary may indicate that the business has money tied up unnecessarily in inventory.

The 2010 figures that we need for this calculation for Delrex Limited are shown in the table below with the inventory holding period for 2010 already calculated. You should now complete the figures for 2011 and 2012 and calculate the inventory holding period for each of these years. Round your figures to the nearest whole day.

Complete the table and then click to display/hide the solution.

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Inventory	2,000	1,700	1,300
Cost of sales	6,100	4,200	3,800
Inventory holding period	120 days	148 days	125 days

What does this tell us about Delrex Limited's liquidity? Write your down your and then click to reveal our suggested analysis.

Explanation

We can see that in 2010 and 2012 Delrex Limited held inventory for approximately four months, while in 2011 the inventory holding period rose to nearly five months. Without knowing what business Delrex Limited operates it is difficult to assess the efficiency of the business in turning inventory into sales. However, it is important that the inventory holding period of a business remains constant.

Accounts receivable collection period

The accounts receivable collection period shows the number of days, on average, that it takes for a business to collect its debts. To calculate the accounts receivable collection period we divide trade receivables by sales revenue and multiply the answer by 365 days.

How would you state the formula to calculate accounts receivable collection period in days? Click to display/hide the solution.

Accounts receivable collection period	$\frac{\text{trade receivables}}{\text{sales revenue}}$	x	365
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In order for a business to have the funds to be able to pay its trade payables, it must be collecting money from its customers within an acceptable time period.

The 2010 figures that we need for this calculation for Delrex Limited are shown in the table below with the accounts receivable collection period for 2010 already calculated. You should now complete the figures for 2011 and 2012 and calculate the accounts receivable collection period for each of the years. Round your figures to the nearest whole day.

Complete the table and then click to display/hide the solution.

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Trade receivables	1,600	1,300	1,150
Sales	9,000	7,500	6,800
Accounts receivable collection period	65 days	63 days	62 days

What does this tell us about Delrex Limited's liquidity? Write down your answer before clicking to reveal our suggested analysis.

Explanation

From the calculations for Delrex Limited we can see that it takes approximately two months to collect payment from its customers. This has stayed fairly consistent for the past three years. If Delrex Limited sells to its customers on 30 days' credit, then an average just over 60 days to collect would seem acceptable. However, if it has 60 days' credit terms then the Delrex Limited collects its debts very efficiently.

Again, the fact that the collection period has remained constant would indicate that Delrex Limited is managing its working capital effectively.

Accounts payable payment period

The accounts payable payment period shows the number of days on average that it takes for a business to pay its suppliers. To calculate the accounts payable payment period we divide trade payables by cost of sales and multiply the answer by 365 days.

How would you state the formula to calculate accounts payable payment period in days? Click to display/hide the solution.

Accounts payable payment period =	$\frac{\text{trade payables}}{\text{cost of sales}}$	x	365
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The 2010 figures that we need for this calculation for Delrex Limited for 2010 are shown in the table below together with the accounts payable payment period for 2010. You should now complete the figures for 2011 and 2012 and calculate the accounts payable payment period for each of the years. Round your figures to the nearest whole day.

Complete the table and then click to display/hide the solution

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Trade payables	1,800	1,200	900
Cost of sales	6,100	4,200	3,800
Accounts payable payment period	108 days	104 days	86 days

What does this tell us about Delrex Limited's liquidity? Write down your answer and then click to reveal our suggested analysis.

Explanation

The accounts payable payment period for Delrex Limited has increased over each of the years that we have analysed and is now 108 days.

This could be because Delrex Limited have negotiated better credit terms with their suppliers, which would mean that they are holding on to their cash for a longer period of time. However, if Delrex Limited are paying later than the agreed credit terms this could strain relations with suppliers, and may adversely affect future delivery of goods. The reason for the increase in accounts payable collection period would need to be investigated before agreeing credit terms with Delrex Limited.

Assessment of liquidity of Delrex Limited

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Current ratio	2.2:1	2.7:1	2.1:1
Quick ratio	1.3:1	1.2:1	1.0:1
Inventory holding period	120 days	148 days	125 days
Accounts receivable collection period	65 days	63 days	62 days
Accounts payable payment period	108 days	104 days	86 days

So far we have looked at performance indicators to assess the liquidity of Delrex Limited. The current and quick ratios indicate good liquidity. Delrex seem to be managing their debt collection periods well. However, the reason for the increase in trade payable collection periods will need to be investigated.

Working capital cycle

One other useful calculation is the working capital cycle. This measures the time between payment for goods received (inventory) and collection of cash from customers. The shorter the time between payment for inventory and collection of cash from customers, the lower the amount of working capital a business needs.

The calculation of the working capital cycle is as follows:

$$\begin{aligned} \text{Working capital cycle} &= \text{inventory days} \\ &+ \text{accounts receivable collection days} \\ &- \text{accounts payable payment days} \end{aligned}$$

Complete the table below to show the working capital cycle for Delrex Limited for the three years and then click to display/hide the solution.

	2012 (£'000)	2011 (£'000)	2010 (£'000)
Inventory holding period	120 days	148 days	125 days
Accounts receivable collection period	65 days	63 days	62 days
Accounts payable payment period	108 days	104 days	86 days
Working capital cycle	77 days	107 days	101 days

What does this tell us about Delrex Limited's liquidity? Write down your answer and then click to reveal our suggested analysis.

Explanation

The working capital cycle for Delrex Limited has reduced by 30 days between 2011 and 2012. This means that the time between paying for inventory and collecting the cash from customers has significantly reduced. The reason for this decrease in the working capital cycle is mainly because of the decrease in the time that the business holds inventory. The improvement in this measure of liquidity indicates that the business is using its working capital more efficiently than in previous years.

Summary

As part of the assessment of creditworthiness for a new or existing customer, performance indicators can be calculated on the financial statements of the business. Part of this analysis should assess the liquidity of the business.

Liquidity performance indicators measure the financial stability of a business and its ability to pay its short-term liabilities as they fall due. The key liquidity indicators that can be calculated are:

- Current ratio

- Quick ratio
- Inventory holding period
- Accounts receivable collection period
- Accounts payable payment period
- Working capital cycle

These performance indicators should be calculated for the most recent financial information and compared with previous years' figures. The performance indicators can also be compared with industry averages. This will help a business to decide whether to grant credit to a customer. In addition to calculating liquidity indicators, performance indicators that assess profitability and financial performance of a potential customer should also be calculated.

You may also want to try the two worksheets: *Calculating profitability indicators* and *Calculating financial position indicators*.