

## 5.18: Operating Efficiency Ratios

### Learning Objectives

By the end of this section, you will be able to:

- Calculate accounts receivable turnover to assess a firm's performance in managing customer receivables.
- Evaluate management's use of assets using total asset turnover and inventory turnover.
- Assess organizational performance using days' sales in inventory calculations.

Efficiency ratios show how well a company uses and manages its assets, one key element of financial health. Important areas of efficiency are the management of sales, accounts receivable, and inventory. A company that is efficient will usually be able to generate revenues quickly using the assets it has acquired. Let's examine four efficiency ratios: accounts receivable turnover, total asset turnover, inventory turnover, and days' sales in inventory.

### Accounts Receivable Turnover

For our discussion of financial statement analysis, we will look at Clear Lake Sporting Goods. Clear Lake Sporting Goods is a small merchandising company (a company that buys finished goods and sells them to consumers) that sells hunting and fishing gear. Figure 5.18.1 shows the comparative income statements and balance sheets for the past two years.

Clear Lake Sporting Goods Comparative Year-End Income Statements			Clear Lake Sporting Goods Comparative Year-End Balance Sheets		
	Prior Year	Current Year		Prior Year	Current Year
Net Sales	\$100,000	\$120,000	<b>Assets:</b>		
Cost of Goods Sold	50,000	60,000	Cash	\$ 90,000	\$110,000
Gross Profit	50,000	60,000	Accounts Receivable	20,000	30,000
Rent Expense	5,000	5,500	Inventory	35,000	40,000
Depreciation Expense	2,500	3,600	Short-Term Investments	15,000	20,000
Salaries Expense	3,000	5,400	Total Current Assets	160,000	200,000
Utility Expense	1,500	2,500	Equipment	40,000	50,000
Operating Income	38,000	43,000	<b>Total Assets</b>	<u>\$200,000</u>	<u>\$250,000</u>
Interest Expense	3,000	2,000	<b>Liabilities:</b>		
Income Tax Expense	5,000	6,000	Accounts Payable	\$ 60,000	\$ 75,000
Net Income	<u>\$ 30,000</u>	<u>\$ 35,000</u>	Unearned Revenue	10,000	25,000
			Total Current Liabilities	70,000	100,000
			Notes Payable	40,000	50,000
			Total Liabilities	<u>\$110,000</u>	<u>\$150,000</u>
			<b>Stockholder Equity</b>		
			Common Stock	75,000	80,000
			Ending Retained Earnings	15,000	20,000
			Total Stockholders' Equity	<u>90,000</u>	<u>100,000</u>
			<b>Total Liabilities and Stockholder Equity</b>	<u>\$200,000</u>	<u>\$250,000</u>

Figure 5.18.1: Comparative Income Statements and Year-End Balance Sheets Note that the comparative income statements and balance sheets have been simplified here and do not fully reflect all possible company accounts.

To begin an analysis of receivables, it's important to first understand the cycles and periods used in the calculations.

## Operating Cycle

A period is one operating cycle of a business. The operating cycle includes the cash conversion cycle plus the accounts receivable cycle (discussed below). Essentially, it is the time it takes a business to purchase or make inventory and then sell it. For example, assume Clear Lake Sporting Goods orders and receives a shipment of fishing lures on June 1. It stocks the shelves with lures and tracks its inventory and sales. By July 15, all the lures from that shipment are gone. In this example, Clear Lake's operating cycle is 45 days.

## Cash Conversion Cycle

Cash, however, doesn't necessarily flow linearly with accounting periods or operating cycles. The cash conversion cycle is the time it takes to spend cash to purchase inventory, produce the product, sell it, and then collect cash from the customer. Accounts receivable is one section of that cycle. Referring to Clear Lake's June 1 shipment of lures that sold by July 15, assume that some of the customers were fishing guides that keep an open account with Clear Lake. This company did not pay for its lures until August 15 when it settled its account. In this example, Clear Lake's cash cycle is 75 days.

Let's take a look at the accounts receivable turnover ratio, which helps assess that element of the cash conversion cycle.

## Accounts Receivable Turnover Ratio

Receivables ratios show company performance in relation to current receivables (what is due from customers), as well as credit policy effect on sales growth. One receivables ratio is called the accounts receivable turnover ratio. This ratio determines how many times (i.e., how often) accounts receivable are collected during a year and converted to cash. A higher number of times indicates that receivables are collected quickly. This quick cash collection may be viewed as a positive occurrence because liquidity improves, and the company may reinvest in its business sooner when the value of the dollar has more buying power (time value of money). The higher number of times may also be a negative occurrence, signaling that credit extension terms are too tight, and it may exclude qualified consumers from purchasing. Excluding these customers means that they may take their business to a competitor, thus reducing potential sales.

In contrast, a lower number of times indicates that receivables are collected at a slower rate. A slower collection rate could signal that lending terms are too lenient; management might consider tightening lending opportunities and more aggressively pursuing payment from its customers. The lower turnover also shows that the company has cash tied up in receivables longer, thus hindering its ability to reinvest this cash in other current projects. The lower turnover rate may signal a high level of bad debt accounts. The determination of a high or low turnover rate really depends on the standards of the company's industry. It's key to note the tradeoff in adjusting credit terms. Loose credit terms may attract more customers but may also increase bad debt expense. Tighter credit terms may attract fewer customers but may also reduce bad debt expense.

The formula for accounts receivable turnover is

$$\text{Accounts Receivable Turnover} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$$

5.18.1

$$\text{Average Accounts Receivable} = \frac{\text{Beginning Accounts Receivable} + \text{Ending Accounts Receivable}}{2}$$

5.18.2

Net credit sales are sales made on credit only; cash sales are not included because they do not produce receivables. However, many companies do not report credit sales separately from cash sales, so "net sales" may be substituted for "net credit sales" in this case. Beginning and ending accounts receivable refer to the beginning and ending balances in accounts receivable for the period. The beginning accounts receivable balance is the same figure as the ending accounts receivable balance from the prior period.

When computing the accounts receivable turnover for Clear Lake Sporting Goods, let's assume net credit sales make up \$100,000 of the \$120,000 of the net sales found on the income statement in the current year.

$$\text{Average Accounts Receivable} = \frac{\$20,000 + \$30,000}{2} = \$25,000$$

5.18.3

$$\text{Accounts Receivable Turnover} = \frac{\$100,000}{\$25,000} = 4$$

5.18.4

To gain a better understanding of its ratio performance, Clear Lake Sporting Goods can compare its turnover to industry averages, key competitors, and its own historical ratios. Given this outcome, the managers may want to consider stricter credit lending practices to make sure credit customers are of a higher quality. They may also need to be more aggressive with collecting any outstanding accounts.

### Think It Through

#### Accounts Receivable Turnover

You are a consultant assessing cash management practices for two firms, Company A and Company B (see Figure 5.18.2).

	Company A	Company B
Beginning Accounts Receivable	\$ 50,000	\$ 60,000
Ending Accounts Receivable	80,000	90,000
Net Credit Sales	\$550,000	\$460,000

Figure 5.18.2: Financial Information for Company A and Company B

Based on the information provided, do the following:

- Compute the accounts receivable turnover ratio.
- Interpret the outcomes, indicating how each company is performing

### Solution

Company A: ART = 8.46 times, Company B: ART = 6.13 times. Upon initial review of this limited information, Company A seems to be performing better since its turnover ratio is higher. Accounts receivable turnover has a significant impact on cash flows. One might want more information on trends for each company with these ratios and a comparison to others in the same industry. More information is helpful in assessing performance.

### Link to Learning

#### American Superconductor Corporation

American Superconductor Corporation specializes in the production and service of energy-efficient wind turbine systems, as well as energy grid construction solutions. On the company's [2019 financial statement](#), the accounts receivable turnover ratio is approximately 6.32 times.

### Total Asset Turnover

Total asset turnover measures the ability of a company to use its assets to generate revenues. A company would like to use as few assets as possible to generate the most net sales. Therefore, a higher total asset turnover means the company is using their assets very efficiently to produce net sales. The formula for total asset turnover is

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

5.18.5

$$\text{Average Total Assets} = \frac{\text{Beginning Total Assets} + \text{Ending Total Assets}}{2}$$

5.18.6

Average total assets are found by dividing the sum of beginning and ending total assets balances found on the balance sheet. The beginning total assets balance in the current year is taken from the ending total assets balance in the prior year.

Clear Lake Sporting Goods' total asset turnover is

$$\text{Average Total Assets} = \frac{\$200,000 + \$250,000}{2} = \$225,$$

5.18.7

$$\text{Total Asset Turnover} = \frac{\$120,000}{\$225,000} = 0.53 \text{ times (rounded)}$$

5.18.8

The outcome of 0.53 means that for every \$1 of assets, \$0.53 of net sales are generated. Over time, Clear Lake Sporting Goods would like to see this turnover ratio increase.

### Inventory Turnover

Inventory turnover measures how many times during the year a company has sold and replaced inventory. This can tell a company how well inventory is managed. A higher ratio is preferable; however, an extremely high turnover may mean that the company does not have enough inventory available to meet demand. A low turnover may mean the company has too much supply of inventory on hand. The formula for inventory turnover is

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Sold}}$$

5.18.9

$$\text{Average Inventory} = \frac{\text{Beginning Inventory} + \text{Ending}}{2}$$

5.18.10

Cost of goods sold for the current year is found on the income statement. Average inventory is found by dividing the sum of beginning and ending inventory balances found on the balance sheet. The beginning inventory balance in the current year is taken from the ending inventory balance in the prior year.

Clear Lake Sporting Goods' inventory turnover is

$$\text{Average Inventory} = \frac{\$35,000 + \$40,000}{2} = \$37,$$

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$$\text{Inventory Turnover} = \frac{\$60,000}{\$37,500} = 1.6$$

5.18.12

A ratio of 1.6 times seems to be a very low turnover rate for Clear Lake Sporting Goods. This may mean the company is maintaining too high an inventory supply to meet a low demand from customers. Managers may want to decrease their on-hand inventory to free up more liquid assets to use in other ways. Keep in mind, ratios should not be taken out of context. One ratio alone can't tell the whole story. Ratios should be used with caution and in conjunction with other ratios and additional financial and contextual information.

As with accounts receivable, there is a trade-off to consider in managing inventory. Low turnover will usually mean a low risk of stockouts and the ability to carry more of what customers are looking for. But high inventory levels will mean that more cash is tied up in inventory. High turnover will mean carrying less inventory and the higher risk of stockouts, causing customers to go elsewhere to find what they need.



Figure 5.18.3 Inventory turnover can help determine how well a company manages its inventory. (credit: “Untitled” by Marcin Wichary/flickr, CC BY 2.0)

### Link to Learning

#### Target Corporation

As we have learned, the inventory turnover ratio shows how well a company manages its inventory. Look through the financial statements in the [2019 Annual Report for Target](#) and calculate the inventory turnover ratio. What does the outcome mean for Target?

### Days' Sales in Inventory

Days' sales in inventory expresses the number of days it takes a company to turn inventory into sales. The fewer the number of days, the more quickly the company can sell its inventory. The greater the number of days, the longer it takes to sell its inventory. The formula for days' sales in inventory is

$$\text{Days' Sales in Inventory} = \frac{\text{Ending Inventory}}{\text{Inventory}} \times$$

5.18.13

Clear Lake Sporting Goods' days' sales in inventory is

$$\text{Days' Sales in Inventory} = \frac{\$40,000}{\$60,000} \times 365 = 243 \text{ days (rounded)}$$

5.18.14

Depending on the industry, 243 days may be a long time to sell inventory. While industry dictates what is an acceptable number of days to sell inventory, 243 days is likely to be unsustainable long-term. Remember, it's important to not take one ratio out of context. Review the ratio in conjunction with other ratios and other financial data. For example, we might review the days' sales in inventory along with accounts receivable turnover for Clear Lake Sporting Goods relative to the industry average to get a better picture of Clear Lake's performance in this area.

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