11 Creating a Successful Financial Plan

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Learning Objectives

On completion of this chapter, you will be able to:

1. Describe how to prepare the basic financial statements and use them to manage a small business.
2. Create projected (pro forma) financial statements.
3. Understand the basic financial statements through ratio analysis.
4. Explain how to interpret financial ratios.
5. Conduct a break-even analysis for a small company.

Fashioning a well-designed financial plan as part of a comprehensive business plan is one the most important steps to launching a new business venture. Entrepreneurs who fail to develop workable strategies for earning a profit from the outset eventually suffer the ultimate business penalty: failure. In addition, potential lenders and investors demand a realistic financial plan before putting their money into a start-up company. More important, a financial plan is a vital tool that helps entrepreneurs to manage their businesses more effectively, steering their way around the pitfalls that cause failures. Proper **financial management** requires putting in place a system that provides entrepreneurs with relevant financial information in an easy-to-read and readily understandable format on a timely basis. It allows entrepreneurs to know not only *how* their businesses are doing financially but also *why* their companies are performing that way. The information in a small company's financial records is one resource to which competitors have no access. Smart entrepreneurs recognize this and put their companies' numbers to work for them so that they can make their businesses more successful. Understanding financial statements and other accounting records can help alert entrepreneurs to emerging problems in their businesses, help them trim costs, and offer clues on how to boost profits.[1]

financial management
a process that provides entrepreneurs with relevant financial information in an easy-to-read format on a timely basis; it allows entrepreneurs to know not only how their businesses are doing financially but also why they are performing that way.

Unfortunately, failure to collect and analyze basic financial data is a common mistake among entrepreneurs. A recent survey by Sage North America reports that about one in five small business owners lacks sufficient financial literacy to identify the cost that has the greatest impact on a company.[2] A study by the National Federation of Independent Business reports that 79 percent of small business owners have no plans to provide their employees with financial training.[3] Both research and anecdotal evidence suggest that a significant percentage of entrepreneurs run their companies without any kind of financial plan and never analyze their companies' financial statements as part of the decision-making process. Bill Hettinger, business consultant and author of *Finance without Fear*, estimates that 75 percent of business owners do not understand or fail to focus on the financial details of their companies.[4] To reach profit objectives, entrepreneurs must be aware of their companies' overall financial position and the changes in financial status that occur over time. Most accounting experts advise entrepreneurs to use one of the popular computerized small business accounting programs such as QuickBooks, Xero, and others to manage routine record-keeping tasks. More than three-quarters (77 percent) of small business owners use accounting software to help track revenues and expenses.[5] Working with an accountant to set up the system at the outset and then having an employee or a bookkeeping service enter the transactions is most efficient for most businesses. These programs make preparing reports, analyzing a company's financial statements, and summarizing data a snap. Studies show that business owners who use accounting software are more likely to be financially literate than those who do not.[6]

This chapter focuses on some practical tools that help entrepreneurs to develop a workable financial plan, keep them aware of their company's financial performance, and enable them to plan for profit. They can use these tools to help them anticipate changes and plot an appropriate profit strategy to meet these shifts head-on. These profit-planning techniques are not difficult to master, nor are they overly time consuming. We will discuss the techniques involved in preparing projected (pro forma) financial statements, conducting ratio analysis, and performing break-even analysis.

LO1
Describe how to prepare the basic financial statements and use them to manage a small business.

Basic Financial Statements

Before we begin building projected financial statements, it would be helpful to review the basic financial reports that measure a company's financial position: the balance sheet, the income statement, and the statement of cash flows. The level of financial sophistication among small business owners may not be high, but the extent of financial reporting among small businesses is. Most small businesses regularly produce summary financial information, almost all of it in the form of these traditional financial statements.

balance sheet
a financial statement that provides a snapshot of a business's financial position, estimating its worth on a given date; it is built on the fundamental accounting equation: Assets = Liabilities + Owner's equity.

The Balance Sheet

Like a digital camera, the **balance sheet** takes a "snapshot" of a business's financial position, providing owners with an estimate of its worth on a given date. Its two major sections show the assets the business owns and the claims creditors and owners have against those assets. The balance sheet is usually prepared on the last day of the month. Figure 11.1 shows the balance sheet for Sam's Appliance Shop for the year ended December 31, 2015.

FIGURE 11.1
Sam's Appliance Shop, Balance Sheet

Assets		
Current Assets		
Cash		$49,855
Accounts Receivable	$179,225	
Less Allowance for Doubtful Accounts	$6,000	$173,225
Inventory		$455,455
Prepaid Expenses		$8,450
Total Current Assets		$686,985
Fixed Assets		
Land		$59,150
Buildings	$74,650	
Less Accumulated Depreciation	$7,050	$67,600
Equipment	$22,375	
Less Accumulated Depreciation	$1,250	$21,125
Furniture and Fixtures	$10,295	
Less Accumulated Depreciation	$1,000	$9,295
Total Fixed Assets		$1,57,170
Intangibles (Goodwill)		$3,500
Total Assets		$847,655
Liabilities		
Current Liabilities		
Accounts Payable		$152,580
Notes Payable		$83,920
Accrued Wages/Salaries Payable		$38,150
Accrued Interest Payable		$42,380
Accrued Taxes Payable		$50,820
Total Current Liabilities		$367,850
Long-Term Liabilities		
Mortgage		$127,150
Note Payable		$85,000
Total Long-Term Liabilities		$212,150
Owner's Equity		
Sam Lloyd, Capital		$267,655
Total Liabilities and Owner's Equity		$847,655

The balance sheet is built on the fundamental accounting equation: Assets = Liabilities + Owner's equity. Any increase or decrease on one side of the equation must be offset by an increase or decrease on the other side, hence the name *balance sheet*. It provides a baseline from which to measure future changes in assets, liabilities, and equity. The first section of the balance sheet lists the company's assets (valued at cost, not actual market value) and shows the total value of everything the business owns. **Current assets** consist of cash and items to be converted into cash within one year or within the normal operating cycle of the company, whichever is longer, such as accounts receivable and inventory. **Fixed assets** are those acquired for long-term use in the business. Intangible assets include items such as goodwill, copyrights, and patents that, although valuable, are not tangible.

The second section shows the business's **liabilities**—the creditors' claims against the company's assets. **Current liabilities** are those debts that must be paid within one year or within the normal operating cycle of the company, whichever is longer, and **long-term liabilities** are those

current assets
assets such as cash and other items to be converted into cash within one year or within the company's normal operating cycle.

fixed assets
assets acquired for long-term use in a business.

liabilities
creditors' claims against a company's assets.

current liabilities
those debts that must be paid within one year or within the normal operating cycle of a company.

long-term liabilities
liabilities that come due after one year.

owner's equity
the value of the owner's investment in the business.

that come due after one year. This section of the balance sheet also shows the owner's equity, value of the owner's investment in the business. It is the balancing factor on the balance sheet, representing all of the owner's capital contributions to the business plus all accumulated (or retained) earnings not distributed to the owner(s).

The Income Statement

income statement
a financial statement that represents a moving picture of a business, comparing its expenses against its revenue over a period of time to show its net income (or loss).

The **income statement** (also called the profit-and-loss statement) compares expenses against revenue over a certain period of time to show the firm's net income (or loss). Like a digital video recorder, the income statement is a "moving picture" of a company's profitability over time. The annual income statement reports the bottom line of the business over the fiscal or calendar year. Figure 11.2 shows the income statement for Sam's Appliance Shop for the year ended December 31, 2015.

To calculate net income or loss, an entrepreneur records sales revenues for the year, which includes all income that flows into the business from sales of goods and services. Income from other

FIGURE 11.2
Sam's Appliance Shop, Income Statement

Net Sales Revenue		
Credit Sales	$1,309,589	$1,870,841
Cash Sales	$561,252	
Cost of Goods Sold		
Beginning Inventory, 1/1/xx	$805,745	
+ Purchases	$939,827	
Goods Available for Sale	$1,745,572	
– Ending Inventory, 12/31/xx	$455,455	
Cost of Goods Sold		$1,290,117
Gross Profit		$580,724
Operating Expenses		
Advertising	$139,670	
Insurance	$46,125	
Depreciation		
Building	$18,700	
Equipment	$9,000	
Salaries	$224,500	
Travel	$4,000	
Entertainment	$2,500	
Total Operating Expenses		$444,495
General Expenses		
Utilities	$5,300	
Telephone	$2,500	
Postage	$1,200	
Payroll Taxes	$25,000	
Total General Expenses		$34,000
Other Expenses		
Interest Expense	$39,850	
Bad Check Expense	$1,750	
Total Other Expenses		$41,600
Total Expenses		$520,095
Net Income		$60,629

...ces (rent, investments, and interest) also must be included in the revenue section of the income statement. To determine net sales revenue, owners subtract the value of returned items and refunds from gross revenue. **Cost of goods sold** represents the total cost, including shipping, of the merchandise sold during the accounting period. Manufacturers, wholesalers, and retailers calculate cost of goods sold by adding purchases to beginning inventory and subtracting ending inventory. Service-providing companies typically have no cost of goods sold because they do not carry inventory.

cost of goods sold the total cost, including shipping, of the merchandise sold during the accounting period.

Subtracting the cost of goods sold from net sales revenue results in a company's gross profit. Allowing the cost of goods sold to get out of control whittles away a company's gross profit and threatens its ability to generate positive net income because a company must pay all of its operating expenses out of its gross profit. Dividing gross profit by net sales revenue produces the **gross profit margin**, a ratio that every small business owner should watch closely. If a company's gross profit margin slips too low, it is likely that it will operate at a loss (negative net income). A business that operates at a gross profit margin of 50 percent must generate $2 in sales for every $1 of operating expenses just to break even. However, a company with a 10 percent gross profit margin must generate $10 in sales for every $1 of operating expenses to reach its break-even point.

gross profit margin gross profit divided by net sales revenue.

Many business owners whose companies are losing money mistakenly believe that the problem is inadequate sales volume; therefore, they focus on pumping up sales at any cost. In many cases, however, the losses their companies are incurring are the result of an inadequate gross profit margin, and pumping up sales only deepens their losses! Repairing a poor gross profit margin requires a company to raise prices, cut manufacturing or purchasing costs, refuse orders with low profit margins, "fire" unprofitable customers (see Figure 11.3), or add new products with more attractive profit margins. *Increasing sales will not resolve the problem.* Monitoring the gross profit margin over time and comparing it to those of other companies in the same industry are important steps to maintaining a company's long-term profitability.

ENTREPRENEURIAL PROFILE: Paul Spiegelman: Stericycle Stericycle, a medical waste company headquartered in Lake Forest, Illinois, is a company that relies on a fundamental set of beliefs to drive how its business operates. The core values that guide Stericycle's culture include accountability to its customers, teamwork in pursuit of a common goal, customers first, continuous improvement, and a strong sense of camaraderie and enjoying work. Paul Spiegelman, Chief Culture Officer of Stericycle, says that if the company's clients don't share these values, the result is a significant negative impact on the company's culture. The founders landed a multi-million-dollar client that shared the values on which they founded the business, but over time the client's priorities shifted from customer service to maximizing its sales. The client began to provide services its customers did not ask for, adding unwanted items to their monthly bills. Despite the negative impact on the company's profits, Stericycle terminated the contract with the client. Employees were pleased to know that Stericycle delivered on its commitment to the customer and sent letters to management thanking them for acting with integrity.[7] ■

Paul Spiegelman, Stericycle

Operating expenses include those costs that contribute directly to the manufacturing and distribution of goods. General expenses are indirect costs incurred in operating the business. "Other expenses" is a catchall category covering all other expenses that don't fit into the other two categories. Subtracting total expenses from total revenue gives the company's net income (or loss) for the accounting period. Reducing expenses increases a company's net income, and even small reductions in expenses can add up to big savings.

operating expenses those costs that contribute directly to the manufacture and distribution of goods.

ENTREPRENEURIAL PROFILE: Wesley Hutchen: Oak Environmental Wesley Hutchen, owner of Oak Environmental, an environmental remediation rental company based in Calgary, Alberta, switched from tracking its equipment by hand to an automated bar-code system that dramatically increased the accuracy of the company's rental records. Although implementing the new system required three months, error rates fell from 20 percent to less than 2 percent, and employees cut in half the time spent tracking equipment. According to Hutchen, the automated system saves $50,000 a year in costs and allows the company to generate $36,000 more per year in equipment rental revenue.[8] ■

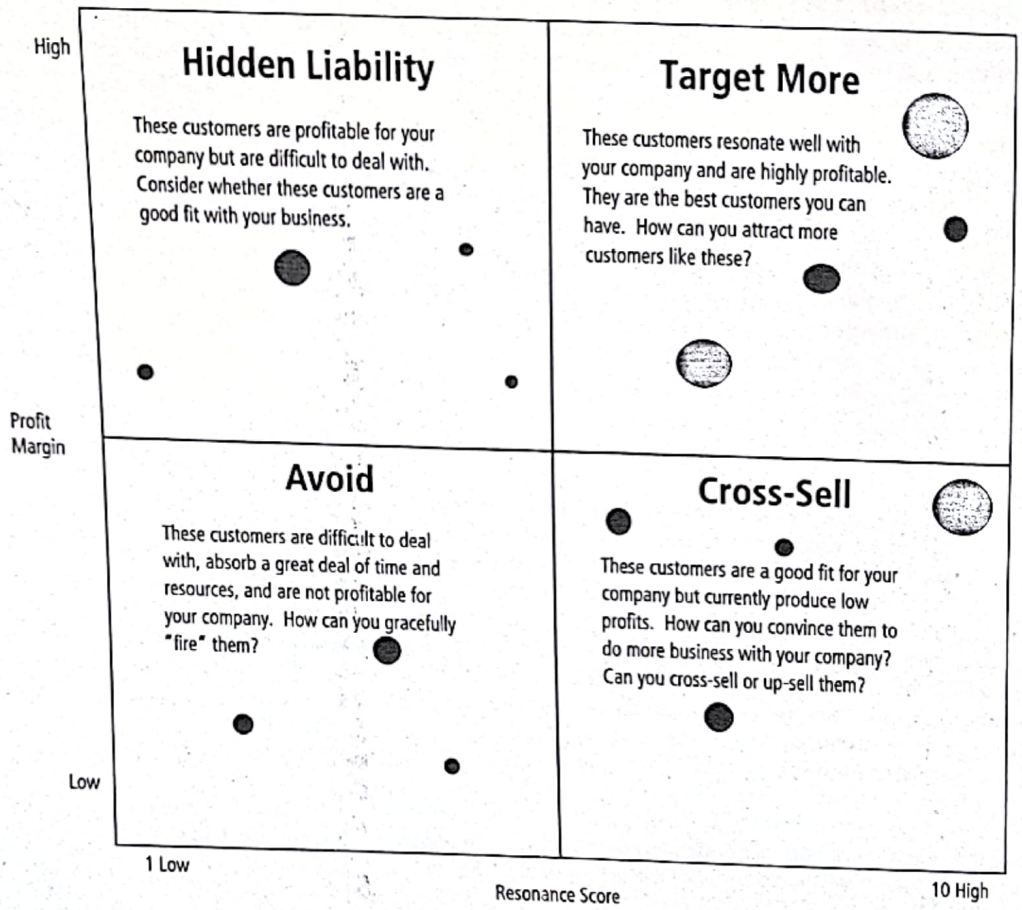
Comparing a company's current income statement to those of prior accounting periods often reveals valuable information about key trends and a company's progress toward its financial

FIGURE 11.3
Customer Profitability Map

Source: Based on Gwen Moran, "Six Weeks to a Better Bottom Line," Entrepreneur, January 2010, pp. 47–51; "Retaining and Divesting Customers: An Exploratory Study of Right Customers, 'At Risk' Right Customers, and Wrong Customers," Kashing Woo and Henry K.Y. Fock, Journal of Services Marketing, Vol. 18, Issue 2/3, 2004, pp. 187–197.

A classic study reports that 20 percent of the typical company's customers are unprofitable. Many business owners who take the time to analyze their customer bases are surprised to discover that some of the customers they thought were profitable actually are costing their companies money. The solution: Raise prices or fees, or "fire" the unprofitable customers. The following customer profitability map helps entrepreneurs identify which of their customers are best – and worst – for their businesses.

Methodology: Select your biggest customers and assign each one a "resonance score" from 1 (difficult) to 10 (easy) that reflects how easy they are to serve. Then calculate the profit margin (profit as a percentage of sales) your company makes from each customer. Plot each customer's score on the map as a circle. The size of the circle should be proportionate to the percentage of the company's total sales for which the customer accounts. The result is a map that shows how your company's customers fall into each of the 4 quadrants.



goals. "Numbers run companies," says Norm Brodsky, serial entrepreneur and owner of Citi-Storage, a successful storage company based in New York City. "It's your responsibility as an owner to know and understand not only the income statement but also the balance sheet of your business. You ignore them at your peril."[9]

The Statement of Cash Flows

statement of cash flows
a financial statement showing the changes in a company's working capital from the beginning of the year by listing both the sources and the uses of those funds.

The **statement of cash flows** show the changes in a company's working capital from the beginning of the accounting period by listing both the sources of funds and the uses of those funds. Many small businesses never need to prepare such a statement; instead, they rely on a cash budget, a less formal managerial tool you will learn about in Chapter 12 that tracks the flow of cash into and out of a company over time. Sometimes, however, creditors, lenders, investors, or business buyers may require this information.

To prepare the statement, owners must assemble the balance sheet and the income statement summarizing the present year's operations. They begin with the company's net income for the period (from the income statement). Then they add the sources of the company's funds: borrowed

funds, owner contributions, decreases in accounts receivable, increases in accounts payable, decreases in inventory, depreciation, and any others. Depreciation is listed as a source of funds because it is a noncash expense that has already been deducted as a cost of doing business. Because the owner has already paid for the item being depreciated, however, its depreciation is a source of funds. Next the owner subtracts the uses of these funds: plant and equipment purchases, dividends to owners, repayment of debt, increases in accounts receivable, decreases in accounts payable, increases in inventory, and so on. The difference between the total sources and the total uses is the increase or decrease in working capital. By investigating the changes in their companies' working capital and the reasons for them, owners can create a more practical financial action plan for the future of the enterprise.

These financial statements are more than just complex documents used only by accountants and financial officers. When used in conjunction with the analytical tools described in the following sections, they can help entrepreneurs to map a firm's financial future and actively plan for profit. Mere preparation of these statements is not enough, however; owners and employees must *understand and use* the information contained in them to make the business more effective and efficient.

Creating Projected Financial Statements

LO2

Create projected (pro forma) financial statements.

Creating projected financial statements helps entrepreneurs to transform their business goals into reality. These projected financial statements answer questions such as the following: What profit can the business expect to earn? If the owner's profit objective is x dollars, what sales level must the company achieve? What fixed and variable expenses can the owner expect at that level of sales? The answers to these and other questions are critical in formulating a functional financial plan for the small business.

This section focuses on creating projected income statements and balance sheets for a small start-up. These projected (or pro forma) statements are a crucial component of every business plan because they estimate the profitability and the overall financial condition of a company in the future. They are an integral part of convincing potential lenders and investors to provide the financing needed to get the company off the ground (the topic of Chapter 13). In addition, because these statements project a company's financial position through the end of the forecasted period, they help entrepreneurs to plan the route to improved financial strength and healthy business growth. To be useful, however, these forecasts must be *realistic and well researched*! Entrepreneurs typically find that revenues are the most difficult to forecast. However, even though estimating future revenues is challenging, the accuracy of these forecasts can make or break a business as it grows.

Because an established business has a history of operating data from which to construct projected financial statements, the task is not nearly as difficult as it is for a start-up company. When creating pro forma financial statements for a business start-up, entrepreneurs typically rely on published statistics that summarize the operation of similar-size companies in the same industry. These statistics are available from a number of sources (described later), but this section draws on information found in the *Annual Statement Studies*, a compilation of financial data collected from 250,000 companies across more than 760 industries organized by Standard Industrial Classification (SIC) Code and North American Industry Classification System (NAICS) published by the Risk Management Association (RMA). Because conditions and markets change so rapidly, entrepreneurs developing financial forecasts for start-ups should focus on creating projections for two years into the future. Although these sources offer guidelines to gauge how reasonable a company's projections are, entrepreneurs should use values that apply to their own particular circumstances to derive their forecasts. Remember that any published financial data is based on operating businesses. For a start-up company, the key is accurate forecasts that show how the business will get to these industry standards. Investors want to see that entrepreneurs have developed well-researched, realistic expectations about their companies' income and expenses and when they expect to start earning a profit.

Projected Financial Statements for a Small Business

One of the most important tasks confronting the entrepreneur launching a new enterprise is to determine the amount of funding required to begin operation as well as the amount required to keep the company going until it begins to generate positive cash flow. The amount of money

needed to begin a business depends on the type of operation, its location, inventory requirements, sales volume, and many other factors. Every new firm must have enough capital to cover all start-up costs, including funds to rent or buy plant, equipment, and tools, and to pay for advertising, wages, licenses, utilities, and other expenses. In addition, an entrepreneur must maintain a reserve of capital to carry the company until it begins to generate positive cash flow. Too often, entrepreneurs are overly optimistic in their financial plans and fail to recognize that expenses initially exceed income (and cash outflow exceeds cash inflow) for most small firms. This period of net losses (and negative cash flow) is normal and may last from just a few months to several years. During this time, entrepreneurs must be able to pay the company's regular bills, meet payroll, purchase inventory, take advantage of cash discounts, pay the company's regular bills, grant customers credit, and meet their personal financial obligations.

THE PROJECTED INCOME STATEMENT When creating a projected income statement, the first step is to create a sales forecast. An entrepreneur has two options: to develop a sales forecast and work down or to set a profit target and work up. Developing a realistic sales forecast for a business start-up is not always easy, but with creativity and research it is possible. Talking with owners of existing businesses in the industry (outside of the local trading area, of course) can provide meaningful insight into the sales levels a company can expect to generate during its early years. For a reasonable fee, entrepreneurs can access published aggregated financial statistics that industry trade associations collect on the companies in their industries. Other organizations, such as the Risk Management Association and Dun & Bradstreet, publish useful financial information for a wide range of industries. Internet searches and trips to the local library will produce the necessary information. Interviews with potential customers and test-marketing an actual product or service also can reveal the number of customers a company can expect to attract. One method for checking the accuracy of a sales estimate is to calculate the revenue other companies in the same industry generate per employee and compare it to your own projected revenue per employee. A value that is out of line with industry standards is not likely to be realistic. Experienced investors will expect any sales forecasts to be clearly explained by a sound marketing plan.

Many entrepreneurs prefer the second method of creating a projected income statement, targeting a profit figure and then "working up" to determine the sales level they must achieve to reach it. Of course, it is important to compare this sales target against the results of the marketing plan to determine whether it is realistic. Once an entrepreneur determines a reasonable profit target, the next step is to estimate the expenses the business will incur to generate that profit.

The profit a small company produces must be large enough to provide a reasonable return on the time the owners spend operating the business and a return on their investment in the business. Entrepreneurs who earn less in their own businesses than they could earn working for someone else must weigh carefully the advantages and disadvantages of choosing the path of entrepreneurship. Why be exposed to all of the risks, sacrifices, and hard work of beginning and operating a small business if the rewards are less than those of remaining in the secure employment of another? Although there are many nonfinancial benefits of owning a business, the net income a company generates should be at least as much as an entrepreneur could earn by working for someone else.

An adequate profit must also include a reasonable return on the owner's total investment in the business. (The owner's total investment is the amount contributed to the company plus any retained earnings from previous years that were funneled back into the business.) In other words, an entrepreneur's target income is the sum of a reasonable salary for the time spent running the business and a normal return on the amount invested in the company. Determining this amount is the first step in creating the projected income statement.

An entrepreneur then must translate this target profit into a net sales figure for the forecasted period. To calculate net sales from a target profit, the entrepreneur can use published industry statistics. Suppose an entrepreneur wants to launch a small retail comic book store and has determined that his target net income is $30,000. Statistics gathered from BizMiner's *Startup Profit and Loss Profile* show that the typical comic book store's net profit margin (Net profit ÷ Net sales) is 12.7 percent. Using this information, he can compute the sales level required to produce a net profit of $30,000:

$$\text{Net profit income} = \frac{\text{Net income}}{\text{Sales (annual)}}$$

for net sales produces the following result:

$$\text{Net sales} = \frac{\$30{,}000}{0.127}$$

$$= \$236{,}220$$

Now the entrepreneur knows that to make a net profit of $30,000 (before taxes), he or she must achieve annual sales of $236,220. To complete the projected income statement, the owner simply applies the appropriate statistics from the *Startup Profit and Loss Profile* to the annual sales figure. Because the statistics for each income statement item are expressed as percentages of net sales, the entrepreneur merely multiplies the proper percentage by the annual sales figure to obtain the desired value. For example, cost of goods sold usually makes up 60.23 percent of net sales for the typical comic book store; therefore, the owner of this new comic book store expects his cost of goods sold to be the following:

$$\text{Cost of goods sold} = \$236{,}220 \times 0.6023 = \$142{,}275$$

The comic book store's complete projected income statement is shown as follows:

Net sales	(100%)	$236,220
−Cost of goods sold	(60.23%)	$142,275
Gross profit margin	(39.77%)	$ 93,945
−Operating expenses	(27.07%)	$ 63,945
Net profit (before taxes)	(12.7%)	$30,000

At this point, the business appears to be a viable venture. However, remember that this income statement represents a sales *goal* the owner may not be able to reach. The next step is to determine whether this required sales volume is reasonable. One useful technique is to break down the required annual sales volume into *daily* sales figures. Assuming that the store will be open six days per week for 52 weeks (312 days), we see that the owner must average $757 per day in sales:

$$\text{Average daily sales} = \frac{\$236{,}220}{312 \text{ days}} = \$757/\text{day}$$

This calculation gives the owner a better perspective of the sales required to yield an annual profit of $30,000.

To determine whether the profit expected from the business will meet or exceed the target income, the entrepreneur also should use this same process to create income statements that are built on pessimistic, most likely, and optimistic sales estimates. The previous analysis shows an entrepreneur the sales level needed to reach a desired profit. But what happens if sales are lower? Higher? Making these projections requires a reliable sales forecast using the market research techniques described in Chapter 8.

Suppose, for example, that after conducting research on the industry, a marketing survey of local customers, and discussions with owners of comic book stores in other markets, the prospective entrepreneur projects annual sales for the proposed business's first year of operation to be only $210,000. The entrepreneur can take this sales estimate and develop a projected income statement:

Net sales	(100%)	$210,000
−Cost of goods sold	(60.23%)	$126,483
Gross profit margin	(39.77%)	$ 83,517
−Operating expenses	(27.07%)	$ 56,847
Net profit (before taxes)	(12.7%)	$26,670

Based on sales of $210,000, this entrepreneur can expect a net income (before taxes) of $26,670. If this amount is acceptable as a return on the investment of time and money in the business, the entrepreneur should proceed with his or her planning.

At this stage in developing the financial plan, the owner should create a more detailed picture of the venture's expected operating expenses. In addition to gathering information from industry trade associations about typical operating expenses, an entrepreneur can contact potential vendors, suppliers, and providers to get estimates of the expenses he or she can expect to incur in his or her area of operation. One entrepreneur who was preparing a business plan for the launch of an upscale women's clothing store contacted local utility companies, insurance agencies, radio and television stations, newspapers, and other vendors to get estimates of her utility, insurance, advertising, and other expenses.

To ensure that they have not overlooked any business expenses in preparing the business plan, entrepreneurs should list all of the expenses they will incur and have an accountant review the list. Sometimes in their estimates of expenses, entrepreneurs neglect to include salaries for themselves, immediately raising a "red flag" among lenders and investors. Without drawing a salary, how will an entrepreneur pay his or her own bills? At the other extreme, lenders and investors frown on exorbitantly high salaries for owners of business start-ups. Typically, salaries are not the best use of cash in a start-up; one guideline is to draw a salary that is about 25 to 30 percent below the market rate for a similar position (and to make adjustments from there if conditions warrant). In addition, as the company grows, executive salaries should be among the *last* expenses to be increased. Reinvesting the extra money in the company accelerates its growth rate.

THE PROJECTED BALANCE SHEET In addition to projecting a start-up's net profit or loss, an entrepreneur must develop a pro forma balance sheet outlining the fledgling firm's assets and liabilities. Most entrepreneurs' primary concern is profitability because, on the surface, the importance of a business's assets is less obvious. In many cases, small companies begin their lives on weak financial footing because entrepreneurs fail to determine their firms' total asset requirements. To prevent this major oversight, entrepreneurs should prepare a projected balance sheet listing every asset their businesses will need and all the claims against these assets.

ASSETS Cash is one of the most useful assets the business owns; it is highly liquid and can quickly be converted into other tangible assets. But how much cash should a small business have at its inception? Obviously, there is no single dollar figure that fits the needs of every small firm. One practical rule of thumb, however, suggests that a company's cash balance should cover its operating expenses (less depreciation, a noncash expense) for at least one inventory turnover period. Using this guideline, we can calculate the cash balance for the small comic book store as follows:

Operating expenses = \$56,847 (from projected income statement)

Less depreciation (1.24% of annual sales*) of \$2,604 (a noncash expense)

Equals: cash expenses (annual) = \$54,243

Annual inventory turnover ratio* = 4.6 times per year

$$\text{Cash requirement} = \frac{\text{Cash expenses}}{\text{Average inventory turnover}} = \frac{\$54{,}243}{4.6} = \$11{,}792$$

*From BizMiner, *Startup Profit and Loss Profile*.

Notice the inverse relationship between the small firm's average turnover ratio and its cash requirement. The higher the number of inventory turns a company generates, the lower its cash requirement. For instance, if this florist could turn its inventory eight times per year, its cash requirement would be \$54,243 ÷ 8 = \$6,780.

Another decision facing the entrepreneur is how much inventory the business should carry. A rough estimate of the inventory requirement can be calculated from the information found on the projected income statement and from published statistics:

Cost of goods sold = \$126,483 (from projected income statement)

$$\text{Average inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory level}} = 4.6 \text{ times/year}$$

Ranging the equation to solve for inventory level produces the following:

$$\text{Average inventory level} = \frac{\$126,483}{4.6 \text{ times/year}}$$

$$\text{Average inventory level} = \$27,496$$

The entrepreneur also includes $1,800 in miscellaneous current assets.

The estimate of fixed assets is as follows:

Fixtures	$14,500
Office equipment	5,250
Computers/cash register	5,125
Signs	7,200
Miscellaneous	1,500
Total	$33,575

LIABILITIES To complete the projected balance sheet, the owner must record all of the small firm's liabilities, the claims that creditors have against its assets. The comic book store owner was able to finance 50 percent of the inventory and fixtures ($20,998) through suppliers and has a short-term note payable in the amount of $3,750. The only other major claim against the firm's assets is a note payable to the entrepreneur's father-in-law for $25,000. The difference between the company's assets ($74,592) and its total liabilities ($49,748) represents the owner's investment in the business (owner's equity) of $24,844.

The final step is to compile all of these items into a projected balance sheet, as shown in Figure 11.4.

Ratio Analysis

LO3
Understand the basic financial statements through ratio analysis.

Would you be willing to drive a car on an extended trip without being able to see the dashboard displays showing fuel level, engine temperature, oil pressure, battery status, or the speed at which you were traveling? Not many people would! Yet many small business owners run their companies exactly that way. They never take the time to check the vital signs of their businesses using their "financial dashboards." The result: their companies develop engine trouble, fail, and leave them stranded along the road to successful entrepreneurship. To avoid becoming a failure statistic, entrepreneurs must understand the numbers that drive their businesses. Norm Brodsky, a successful serial entrepreneur, says business owners develop a feel for their financial

FIGURE 11.4
Projected Balance Sheet

Assets		Liabilities	
Current Assets		**Current Liabilities**	
Cash	$11,792	Accounts Payable	$20,998
Inventory	27,496	Note Payable	3,750
Miscellaneous	1,800		
Total Current Assets	$41,088	Total Current Liabilities	$24,748
Fixed Assets		**Long-Term Liabilities**	
Fixtures	$14,500	Note Payable	$25,000
Office Equipment	5,250		
Computer/Cash Register	5,125	Total Liabilities	$49,748
Signs	7,200		
Miscellaneous	1,500		
Total Fixed Assets	$33,575	**Owner's Equity**	$24,915
Total Assets	$74,663	**Total Liabilities and Owner's Equity**	$74,663

statements and the specific numbers that they must watch closely to ensure their company's success. By watching the numbers over time, successful entrepreneurs learn to identify patterns that can signal problems in their businesses.[10]

Smart entrepreneurs know that once they have their businesses up and running with the help of a solid financial plan, the next step is to keep their companies moving in the right direction with the help of proper financial controls. Establishing these controls—and using them consistently—is one of the keys to keeping a business vibrant and healthy. A sound system of financial controls serves as an early warning device for underlying problems that could destroy a young business. A company's financial accounting and reporting systems help signal entrepreneurs that their businesses are experiencing declining profits, increasing overhead expenses, and growing inventories or accounts receivable. All of these changes have a negative impact on cash flow, the lifeblood of every business. As cash flow suffers, entrepreneurs may struggle to pay vendors, may not be able to order enough raw materials and hire enough workers, and may not be able to maintain equipment properly. To avoid these problems, entrepreneurs must tune into the signals that their businesses send about their performance.

ratio analysis
a method of expressing the relationship between any two accounting elements that allows business owners to analyze their companies' financial performances.

What are these signals, and how does an entrepreneur go about tracking and focusing on these them One extremely helpful tool is ratio analysis. **Ratio analysis**, a method of expressing the relationships between any two elements on financial statements, provides a convenient technique for performing financial analysis. When analyzed properly, ratios serve as barometers of a company's financial health. "You owe it to yourself to understand each ratio and what it means to your business," says one accountant. "Ratios point out potential trouble areas so you can correct them before they multiply."[11] Ratio analysis allows entrepreneurs to determine whether their companies are carrying excessive inventory, experiencing heavy operating expenses, overextending credit, taking on too much debt, and managing to pay their bills on time and to answer other questions relating to the efficient and effective operation of the overall business. Unfortunately, few business owners actually compute financial ratios and use them to manage their businesses.

Smart business owners use financial ratio analysis to identify problems in their businesses while they are still problems and not business-threatening crises. Tracking these ratios over time permits an owner to spot a variety of red flags that are indications of these problem areas. This is critical to business success because business owners cannot solve problems they do not know exist! Business owners also can use ratio analysis to increase the likelihood of obtaining loans. By analyzing their financial statements with ratios, business owners can anticipate potential problems and identify important strengths in advance. Lenders and investors use ratios to analyze the financial statements of companies looking for financing, comparing them against industry averages and looking for trends over time.

How many ratios should an entrepreneur monitor to maintain adequate financial control over a business? The number of ratios that an owner could calculate is limited only by the number of accounts on a firm's financial statements. However, tracking too many ratios only creates confusion and saps the meaning from an entrepreneur's financial analysis. The secret to successful ratio analysis is *simplicity*, focusing on just enough ratios to provide a clear picture of a company's financial standing.

Twelve Key Ratios

In keeping with the idea of simplicity, we will describe 12 key ratios that enable most business owners to monitor their companies' financial positions without becoming bogged down in financial details. This section presents explanations of these ratios and examples based on the balance sheet and the income statement for Sam's Appliance Shop shown in Figure 11.1 and Figure 11.2. We will group them into four categories: liquidity ratios, leverage ratios, operating ratios, and profitability ratios.

liquidity ratios
tell whether a small business will be able to meet its short-term financial obligations as they come due.

LIQUIDITY RATIOS **Liquidity ratios** tell whether a small business will be able to meet its short-term financial obligations as they come due. These ratios forewarn a business owner of impending cash flow problems. A small company with solid liquidity not only is able to pay its bills on time but also has enough cash to take advantage of attractive business opportunities as they arise. Liquidity ratios measure a company's ability to convert its assets to cash quickly and without a

value to pay its short-term liabilities. The primary measures of liquidity are the current o and the quick ratio.

1. Current Ratio. The **current ratio** measures a small firm's solvency by indicating its ability to pay current liabilities (debts) from current assets. It is calculated in the following manner:

current ratio measures a small firm's solvency by indicating its ability to pay current liabilities out of current assets.

$$\text{Current ratio} = \frac{\text{Currect assets}}{\text{Currect liabilities}}$$

$$= \frac{\$686,985}{\$367,850}$$

$$= 1.87:1$$

Sam's Appliance Shop has $1.87 in current assets for every $1 it has in current liabilities.

Current assets are those that an owner expects to convert into cash in the ordinary business cycle and normally include cash, notes/accounts receivable, inventory, and any other short-term marketable securities. Current liabilities are those short-term obligations that come due within one year and include notes/accounts payable, taxes payable, and accruals.

The current ratio is sometimes called the *working capital ratio* and is the most commonly used measure of short-term solvency. Typically, financial analysts suggest that a small business maintain a current ratio of at least 2:1 (i.e., $2 of current assets for every $1 of current liabilities) to maintain a comfortable cushion of working capital. Generally, the higher a company's current ratio, the stronger its financial position; however, a high current ratio does not guarantee that a company is using its assets in the most profitable manner. For example, a business may have an abundance of accounts receivable (many of which may not even be collectible) or may be over-investing in inventory.

With its current ratio of 1.87, Sam's Appliance Shop could liquidate its current assets at 53.5 percent ($1 \div 1.87 = 53.5\%$) of its book value and still manage to pay its current creditors in full.

2. Quick Ratio. The current ratio sometimes can be misleading because it does not reflect the *quality* of a company's current assets. As we have already seen, a company with a large number of past-due receivables and stale inventory could boast an impressive current ratio and still be on the verge of financial collapse. The **quick ratio** (sometimes called the acid test ratio) is a more conservative measure of a company's liquidity because it shows the extent to which its most liquid assets cover its current liabilities. This ratio includes only a company's "quick assets"—those assets that a company can convert into cash immediately if needed—and excludes the most illiquid asset of all, inventory. It is calculated as follows:

quick ratio a conservative measure of a firm's liquidity, measuring the extent to which its most liquid assets cover its current liabilities.

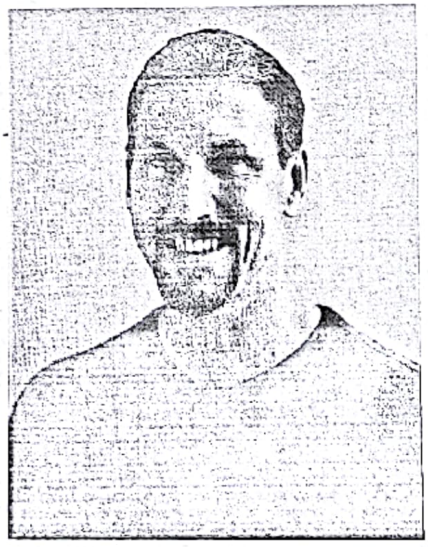
$$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Currect liabilities}}$$

$$= \frac{\$686,985 - \$455,455}{\$367,850}$$

$$= 0.63:1$$

Sam's Appliance Shop has 63 cents in quick assets for every $1 of current liabilities.

The quick ratio is a more rigorous test of a company's liquidity. It measures a company's capacity to pay its current debts if all sales income ceased immediately. Generally, a quick ratio of 1:1 is considered satisfactory. A ratio of less than 1:1, as is the case with Sam's Appliance Shop, indicates that the small firm is dependent on inventory and on future sales to satisfy short-term debt. A quick ratio of greater than 1:1 indicates a greater degree of financial security.


Alan Knitowski, Phunware

ENTREPRENEURIAL PROFILE: Alan Knitowski: Phunware Alan Knitowski, Chairman and CEO of the mobile apps company Phunware, learned about the importance of managing cash flow and liquidity from his two

previous start-ups. He underestimated the time and expense required to develop the products for his first company but was able to raise more funding and eventually sell the pany to Cisco Systems. In his second company, in which he was an investor and board member, the outcome was not as happy. Two large customers were unable to pay their bills after they were hit hard by the credit crisis of 2008, which forced Knitowski's company into bankruptcy. In his third start-up, Phunware, Knitowski implemented several practices to ensure effective financial and cash management. Every Friday, Phunware's controller e-mails cash on hand, current accounts payable, and the company's quick ratio to the entire management team, which analyzes the financial data to identify any troublesome trends. If the key financial metrics are trending in the wrong direction, managers identify the reason and take quick corrective actions. The team pays particular attention to accounts receivable to determine whether any customers are paying too slowly and what actions might be necessary as a result of any late payments. Managers monitor cash on hand using a color-coded system. If the company has at least 18 months of cash on hand, managers see a greenbar. If cash on hand would cover 12 to 18 months of expenses, the cash on hand figure is coded yellow, and managers immediately begin to evaluate debt and equity funding sources to improve Phunware's cash position. They do not wait until the company's cash on hand drops too low to act. The company has never dropped below 12 months of cash on hand, which would be coded red.[13] ■

leverage ratios
measure the financing supplied by a firm's owners against that supplied by its creditors; they are a gauge of the depth of a company's debt.

LEVERAGE RATIOS **Leverage ratios** measure the financing supplied by a firm's owners against that supplied by its creditors; they are a gauge of the depth of a company's debt. These ratios show the extent to which an entrepreneur relies on debt capital (rather than equity capital) to finance the business. They also provide a measure of the degree of financial risk in a company. Generally, small businesses with low leverage ratios are less affected by economic downturns, but the returns for these firms are lower during economic booms. Conversely, small companies with high leverage ratios are more vulnerable to economic slides because their debt loads demolish cash flow; however, they have greater potential for large profits.

Today, 33 percent of small businesses rely on bank loans, a decrease from 50 percent of small companies in 2008. This decline is due to the reduction in available bank credit for small businesses since the financial crisis of 2008. During that same time period, small business owners have looked toward loans from family and friends to meet their borrowing needs. Small business use of private loans from family and friends *increased* from 12 percent to 17 percent over that same time period.[12] Debt is a powerful financial tool, whatever its source, but companies must handle it carefully—just as a demolitionist handles dynamite. Like dynamite, too much debt can be deadly. Unfortunately, some companies push their debt loads beyond the safety barrier and threaten their ability to survive. Heavy debt loads can be deadly, particularly when a company's sales or earnings falter, as often happens during economic downturns.

Managed carefully, however, debt can boost a company's performance and improve its productivity.

debt ratio
measures the percentage of total assets financed by a company's creditors compared to its owners.

3. Debt Ratio. A small company's **debt ratio** measures the percentage of total assets financed by its creditors compared to its owners. The debt ratio is calculated as follows:

$$\text{Debit ratio} = \frac{\text{Total debt (or liabilities)}}{\text{Total assets}}$$

$$= \frac{\$367{,}850 + \$212{,}150}{\$847{,}655}$$

$$= 0.68:1$$

Creditors have claims of 68 cents against every $1 of assets that Sam's Appliance Shop owns, meaning that creditors have contributed twice as much to the company's asset base as its owners have.

Total debt includes all current liabilities and any outstanding long-term notes and bonds. Total assets represent the sum of the firm's current assets, fixed assets, and intangible assets. A high debt ratio means that creditors provide a large percentage of a company's total financing and, therefore, bear most of its financial risk. Owners generally prefer higher leverage ratios; otherwise, business

must come either from the owners' personal assets or from taking on new owners, which means giving up more control over the business. In addition, with a greater portion of a firm's assets financed by creditors, the owner is able to generate profits with a smaller personal investment. Creditors, however, typically prefer moderate debt ratios because a lower debt ratio indicates a smaller chance of creditor losses in case of liquidation. To lenders and creditors, high debt ratios mean a higher risk of default.

ENTREPRENEURIAL PROFILE: Apax Partners and Cengage Learning In 2007 Apax Partners, a private equity firm, purchased Cengage Learning, an education textbook publisher, for $7.75 billion using $5 billion in debt financing. Due to the economic downturn that began in 2008 and to changes in the publishing industry, Cengage experienced a sharp decline in revenue and by 2012, was losing up to $2 billion a year. Cengage tried to renegotiate its debt but was unable to come to terms with its creditors. The company had a debt ratio of 0.96:1, which meant it had $0.96 in debt for every $1 in assets. The company entered into Chapter 11 bankruptcy, which allowed it to continue operations and negotiate while it restructured its financing. After nine months in bankruptcy, the company emerged with a new debt structure. The bankruptcy court gave creditors a majority of equity in the company in exchange for their credit claims against the company. Cengage is pursuing a digital publishing business model, moving away from print publishing, in an attempt to create a sustainable business model.[14] ■

According to a senior analyst at Dun & Bradstreet's Analytical Services, "If managed properly, debt can be beneficial because it's a great way to have money working for you. You're leveraging your assets, so you're making more money than you're paying out in interest." However, excessive debt can be the downfall of a business. "As we pile up debt on our personal credit cards our lifestyles are squeezed," he says. "The same thing happens to a business. Overpowering debt sinks thousands of businesses each year."[15]

4. Debt-to-Net-Worth Ratio. A small company's **debt-to-net-worth (debt-to-equity) ratio** also expresses the relationship between the capital contributions from creditors and those from owners and measures how highly leveraged a company is. This ratio reveals a company's capital structure by comparing what the business "owes" to "what it is worth." It is a measure of a small company's ability to meet both its creditor and owner obligations in case of liquidation. The debt-to-net-worth ratio is calculated as follows:

debt-to-net-worth (debt-to-equity) ratio expresses the relationship between the capital contributions from creditors and those from owners and measures how highly leveraged a company is.

$$\text{Debt-to-net worth ratio} = \frac{\text{Total debt (or liabilities)}}{\text{Tangible net worth}}$$

$$= \frac{\$367{,}850 + \$212{,}150}{\$267{,}655 - \$3{,}500}$$

$$= 2.20:1$$

Sam's Appliance Shop owes creditors $2.20 for every $1 of equity Sam owns.

Total debt is the sum of current liabilities and long-term liabilities, and tangible net worth represents the owners' investment in the business (capital + capital stock + earned surplus + retained earnings) less any intangible assets (e.g., goodwill) the firm owns.

The higher this ratio, the more leverage a business is using and the lower the degree of protection afforded creditors if the business should fail. A higher debt-to-net-worth ratio also means that the firm has less capacity to borrow; lenders and creditors see the firm as being "borrowed up." Conversely, a low ratio typically is associated with a higher level of financial security, giving the business greater borrowing potential.

ENTREPRENEURIAL PROFILE: The Tribune Company Founded in 1847, the Tribune Company publishes seven newspapers, including the *Los Angeles Times, Chicago Tribune, The Baltimore Sun, Sun Sentinel (South Florida), Orlando Sentinel, Hartford Courant, The Morning Call,* and *Daily Press.* The company also owns 23 television stations, WGN America on national cable, and radio stations including WGN-AM radio in Chicago. In late 2007, real estate entrepreneur Sam Zell purchased the Tribune Company in a leveraged buyout. One year later, following

You Be the Consultant

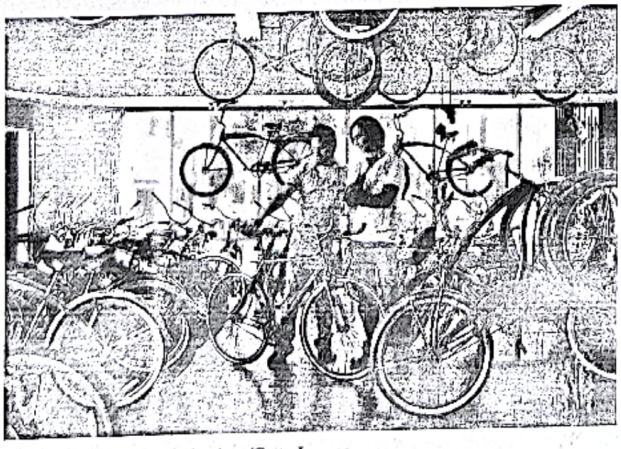
The Challenges of Debt

Charles Kuhn's business, Kopp's Cycle, is a part of bicycling history. E.C. Kopp founded Kopp's Cycle in Princeton, New Jersey, in 1891. The Kopp family operated the business until the Kuhn family purchased it. Eventually Charles took over the store from his father in the late 1970s. Celebrities from Albert Einstein to Brooke Shields purchased bicycles from Kopp's Cycle. Legendary road racing cyclist Greg LeMond was a customer from the time he was a junior racer.

Kopp's Cycle looks like a typical bike shop. The front of the retail store displays high-end bicycles and accessories. In the back of the store is a repair shop that looks the same as it did when Kuhn's father first purchased the business.

Charles Kuhn purchased the building that houses Kuhn's Cycle in 2004 for about $800,000, which he financed with a $775,000 loan secured by an SBA guarantee. Kuhn was not happy with SBA financing, however, because it came with significant additional paperwork. In addition, the SBA loan had an adjustable rate, which worried him about the actual long-term cost of the loan and the uncertainty about payments as the interest rate changed. As a result, Kuhn refinanced the loan through another bank that offered him a conventional fixed rate loan for $825,000. This new loan was not an SBA guaranteed loan, which pleased Kuhn. At the time of the refinancing, the building was appraised at $1.3 million. Although the loan was amortized over 25 years, it had a balloon payment of $775,000 due in three years. Balloon payments are a common feature of loans to small business owners. At the time of the balloon payment, the borrower must refinance, either with the current lender or with a new lender.

As it did with many small businesses, the economic downturn in 2008 hit Kopp's Cycle hard. In addition, online sales of high-end bicycles were increasing significantly. Online retailers were able to offer prices that a small business like Kopp's Cycle could not compete with due to its lower sales volume and higher overhead. Revenues dropped from $498,000 in 2008 to $393,000 in 2009. Kuhn cut prices in 2010 to compete with online retailers, which did bring his sales levels back up. However, the price cuts resulted in profit margins dropping from 10 to 15 percent down to 1 percent. To manage cash flow during this time, Kuhn relied on credit cards as a funding source for the business. He amassed credit card debt of more than $100,000.



Blend Images/Moxie Productions/Getty Images

Kuhn decided to seek new financing for his business. His plan was to borrow $1 million to pay off the $800,000 balance on the building loan, pay off the credit card balances, and provide $100,000 in working capital to help manage cash flow. Kuhn estimated that his building is now worth about $1.5 million, which he believed should be more than enough equity to support the loan.

The first bank Kuhn contacted about a loan declined to make a loan. After reviewing Kopp's Cycle's financial statements, the loan officer said Kopp's Cycle's debt coverage ratio, the ratio of monthly net cash flow divided by debt payments, did not meet the bank's minimum of 1.1 to 1.5. With Kopp's Cycle's declining profit margins, it could not meet the required debt coverage ratio. Bankers want to see a significant cushion in a company's monthly cash flow to ensure that even if the company's financial position declines, it can maintain payments on the loan. The second bank Kuhn approached gave him the same answer. A third banker did not even return Kuhn's phone calls.

Kuhn then turned to a loan broker, who he paid an upfront fee and who would take 10 percent of the loan amount once a loan was closed. However, the bank the loan broker found for Kuhn to talk with also passed on the loan, citing concerns over the true market value of Kuhn's building.

Although Kuhn did not believe that a new loan was essential for the survival of the business, he did hope he could secure new financing to bolster Kopp's Cycle's financial position. In addition, Kiuhn must address the balloon payment that is part of his current building loan sooner or later. There was no guarantee that his current bank would renew this loan, and he had not had much luck finding alternative financing.

1. What are the benefits to entrepreneurs who use debt capital (leverage) to finance their companies' growth?
2. What are the risks associated with debt financing?
3. Why is using ratio analysis to keep track of their companies' financial performance over time so important for entrepreneurs?
4. What lessons concerning the use of debt financing can entrepreneurs learn from Charles Kuhn's experience?
5. Assume the role of a small business banker. Suppose that Kuhn had approached you for a bank loan to refinance his debt. Which financial ratios would you be most interested in? Why? What advice would you offer him?
6. Assume the role of a small business counselor. What advice would you offer him to ensure the long-term survival of Kopp's Cycle?

Source: Based on Robb Mandelbaum, "A Bicycle Shop Struggles to Get a Loan," *New York Times*, June 2, 2011, p. B5; "Welcome to Kopp's Cycle," Kopp's Cycle, n.d., http://koppscycle.net/articles/kopps-cycle-history-pg59.htm; Linda Arntzenius, "All in a Day's Work: Charles Kuhn," *Town Topics*, n.d., http://www.towntopics.com/sep1306/other4.html.

the 2008 economic downturn and a prolonged decline in advertising revenues, the Tribune Company filed for protection under Chapter 11 bankruptcy. On December 31, 2012, after four years in bankruptcy, the Tribune Company emerged with its restructured financing in place. Before the restructuring, the company had more than $13 billion in liabilities and a negative equity balance of –$8.27:1 billion, which produced a negative debt to equity ratio. Its debt-to-assets ratio was 2.1:1, which means it owed $2.10 in debt for every $1 in assets! After reorganization, the company had $5.75 billion in liabilities and an equity balance of $4.93 billion, which is a debt-to-equity ratio of 1.16:1. Its debt-to-asset ratio improved to 0.50:1.[16] ■

As a company's debt-to-net-worth ratio approaches 1:1, the creditors' interest in the business approaches that of the owners. If the ratio is greater than 1:1, as is still the case with the Tribune Company after reorganization, creditors' claims exceed those of the owners, and the business may be undercapitalized. In other words, the owner has not supplied an adequate amount of capital, forcing the business to be overextended in terms of debt. Lenders become nervous when a company's debt-to-equity ratio reaches 3:1 or more.

5. Times-Interest-Earned Ratio. The **times-interest-earned ratio** is a measure of a small company's ability to make the interest payments on its debt. It tells how many times a company's earnings cover the interest payments on the debt it is carrying. This ratio measures the size of the cushion a company has in covering the interest cost of its debt load. The times-interest-earned ratio is calculated as follows:

times-interest-earned ratio
measures a small firm's ability to make the interest payments on its debt.

$$\text{Times interest earned ratio} = \frac{\text{Earnings before interest and taxes (or EBIT)}}{\text{Total interest expense}}$$

$$= \frac{\$60{,}629 + \$39{,}850}{\$39{,}850}$$

$$= 2.52:1$$

Sam's Appliance Shop's earnings are 2.5 times greater than its interest expense.

EBIT is the firm's profit *before* deducting interest expense and taxes; the denominator measures the amount the business paid in interest over the accounting period. A high ratio suggests that a company has little difficulty meeting the interest payments on its loans; creditors see this as a sign of safety for future loans. Conversely, a low ratio is an indication that the company is overextended in its debts; earnings will not be able to cover its debt service if this ratio is less than one. Many banks look for a times-interest-earned ratio of at least 2:1, but some creditors may want to see 4:1 to 6:1 before pronouncing a small company a good credit risk. Before Vicorp Restaurants Inc., the owner of Village Inn and Bakers Square restaurant chains, filed for bankruptcy, its times-interest-earned ratio had slipped from nearly 3:1 to just 1.85:1.[17] According to a Pepperdine University survey of bankers, the top reason that business loans are denied is inadequate cash flow and profits.[18]

Although low to moderate levels of debt can boost a company's financial performance, trouble looms on the horizon for businesses whose debt loads are so heavy that they must starve critical operations, research and development, customer service, and other vital areas just to pay interest on the debt. Because their interest payments are so large, highly leveraged companies find they are restricted when it comes to spending cash, whether on an acquisition, normal operations, or capital spending. Some entrepreneurs are so averse to debt that they run their companies with little or no borrowing, relying instead on their business's cash flow to finance growth.

ENTREPRENEURIAL PROFILE: Jim Zamichieli: Zamolution When Jim Zamichieli started his digital marketing company, Zamolution, he invested $20,000 in personal savings rather than borrow start-up capital. Zamichieli says he is more careful and thoughtful because it is his money at work in the business. The former corporate executive saw many companies founder when they took on too much debt, something he vows never to do, even though he admits that his company could probably grow more rapidly if he used bank credit.[19] ■

operating ratios help an entrepreneur evaluate a small company's overall performance and indicate how effectively the business employs its resources.

average-inventory-turnover ratio measures the number of times its average inventory is sold out, or turned over, during an accounting period.

OPERATING RATIOS **Operating ratios** help an entrepreneur evaluate a small company's overall performance and indicate how effectively the business employs its resources. The more effectively its resources are used, the less capital a small business will require. These five operating ratios are designed to help an entrepreneur spot those areas he or she must improve if his or her business is to remain competitive.

6. Average-Inventory-Turnover Ratio. A small firm's **average-inventory-turnover ratio** measures the number of times its average inventory is sold out, or turned over, during the accounting period. This ratio tells the owner whether an entrepreneur is managing inventory properly. It indicates whether a business's inventory is understocked, overstocked, or obsolete. The average-inventory-turnover ratio is calculated as follows:

$$\text{Average-inventory-turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$= \frac{\$1{,}290{,}117}{(\$805{,}745 + \$455{,}455) \div 2}$$

$$= 2.05 \text{ times/year}$$

Sam' Appliance Shop turns its inventory about two times a year, or once every 178 days.

Average inventory is the sum of the value of the firm's inventory at the beginning of the accounting period and its value at the end of the accounting period, divided by 2.

This ratio tells an entrepreneur how fast merchandise is moving through the business and helps him or her to balance the company's inventory on the fine line between oversupply and undersupply. To determine the average number of days units remain in inventory, the owner can divide the average-inventory-turnover ratio into the number of days in the accounting period (e.g., 365 days ÷ average-inventory-turnover ratio). The result is called *days' inventory* (or *average age of inventory*).

Auto dealerships often use the average age of inventory as a measure of their performance and consider 50 to 60 days' worth of new cars to be an adequate inventory. Used car dealers' goal is to have 35 to 45 days' worth of used cars in inventory. Slow-turning inventory cannibalizes car dealers' profitability because of the interest and other expenses they incur. Joseph Lescota, a retail automotive expert, says the ability to move inventory drives profits in his industry. At luxury new car dealerships, Lescota says the cost of holding a car in inventory can be as high as $90 per day; at the typical used car dealership, the cost is $21 per day. If a used car dealership sells a car within 20 days, it earns an average gross profit of $2,000. However, if that same car sits on the lot for 80 days before it sells, the average gross profit is just $740 (an occurrence known in the industry as "lot rot.")

ENTREPRENEURIAL PROFILE: Jennifer Cattaui: Babesta Jennifer Cattaui, founder of Babesta in New York City, sells children's clothing and furniture online and through two retail stores. Cattaui uses a financial dashboard that helps the Babesta management team monitor the financial health of the business and make decisions based on financial data. The dashboard gives the team metrics that assess cash balance, cash flow, inventory, and revenue. Babesta uses software that displays key metrics using a gauge. If the gauge is in the red zone, the team digs deeper to find the cause. If it is in the green zone, the team knows that things are going well for that specific financial aspect of the business. For example, when its inventory gauge was in the red, the management team assessed the company's inventory and realized that they had furniture in inventory that was not selling. After cutting back the number of those items in Babesta's inventory, the gauge soon returned to the green zone, telling management that inventory turnover had returned to a satisfactory level.[20] ■

An above-average inventory turnover indicates that the small business has a healthy, salable, and liquid inventory and a supply of quality merchandise that is supported by sound pricing policies. A below-average inventory turnover suggests an illiquid inventory characterized by obsolescence, overstocking, stale merchandise, and poor purchasing procedures. Businesses that turn their inventories more rapidly require a smaller inventory investment to produce a particular sales volume. That means that these companies tie up less cash in inventory that idly sits on shelves. For instance, if Sam's could turn its inventory *four* times each year instead of just *two*,

company would require an average inventory of just $322,529 instead of the current level of $630,600 to generate sales of $1,870,841. Increasing the number of inventory turns would free up more than $308,000 in cash currently tied up in excess inventory! Sam's would benefit from improved cash flow and higher profits.

The inventory turnover ratio can be misleading, however. For example, an excessively high ratio could mean that a company does not have enough inventory on hand and may be losing sales because of stock-outs. Similarly, a low ratio could be the result of planned inventory stockpiling to meet seasonal peak demand. Another problem is that the ratio is based on an inventory balance calculated from two days out of the entire accounting period. Thus, inventory fluctuations due to seasonal demand patterns are ignored, and this may bias the resulting ratio. There is no universal, ideal inventory turnover ratio. Financial analysts suggest that a favorable turnover ratio depends on the type of business, its size, its profitability, its method of inventory valuation, and other relevant factors. The most meaningful benchmark for comparison is other companies of similar size in the same industry. For instance, the typical supermarket turns its inventory on average about 15 times a year, but a jewelry store averages just 1.5 to 2 inventory turns a year.

7. Average-Collection-Period Ratio. A small firm's **average-collection-period ratio** (or days sales outstanding [DSO]) tells the average number of days it takes to collect accounts receivable. To compute the average-collection-period ratio, an entrepreneur must first calculate the company's receivables turnover. Given that Sam's *credit* sales for the year were $1,309,589 (out of the total sales of $1,870,841), the company's receivables turnover ratio is as follows:

average-collection-period ratio measures the number of days it takes to collect accounts receivable.

$$\text{Receivables turnover ratio} = \frac{\text{Credit sales}}{\text{Accounts receivable}} = \frac{\$1{,}309{,}589}{\$179{,}225} = 7.31 \text{ times/year}$$

Sam's Appliance Shop turns over its receivables 7.31 times per year. This ratio measures the number of times the firm's accounts receivable turn over during the accounting period. The higher the firm's receivables turnover ratio, the shorter the time lag is between the sale and the cash collection.

Use the following to calculate the firm's average-collection-period ratio:

$$\text{Average-collection-period ratio} = \frac{\text{Days in accounting period}}{\text{Receivables turnover ratio}} = \frac{365 \text{ days}}{7.31 \text{ times/year}} = 50.0 \text{ days}$$

Sam's Appliance Shop's accounts receivable are outstanding for an average of 50 days. Typically, the higher a firm's average collection period ratio, the greater its chance of incurring bad debt losses. Sales don't count unless a company collects the revenue from them.

One of the most useful applications of the collection period ratio is to compare it to the industry average and to the company's credit terms. This comparison indicates the degree of control a small company exercises over its credit sales and collection techniques. A healthy collection period ratio depends on the industry in which a company operates. For instance, the average collection period for companies that manufacture medical equipment is 56 days; for tire retailers, it is just 16 days.[21] Perhaps the most meaningful analysis is comparing the collection period ratio to a company's credit terms. One rule of thumb suggests that a company's collection period ratio should be no more than one-third greater than its credit terms. For example, if a small company's credit terms are net 30 (payment due within 30 days), its average-collection-period ratio should be no more than 40 days ($30 + 30 \times 1/3$). For this company, a ratio greater than 40 days indicates poor collection procedures.

Slow payers represent a great risk to many small businesses. Many entrepreneurs proudly point to rapidly rising sales only to find that they must borrow money to keep their companies

TABLE 11.1 How Lowering Your Average Collection Period Can Save You Money

Too often, entrepreneurs fail to recognize the importance of collecting their accounts receivable on time. After all, collecting accounts is not as glamorous or as much fun as generating sales. Lowering a company's average collection period ratio, however, *can* produce tangible—and often significant—savings. The following formula shows how to convert an improvement in a company's average collection period ratio into dollar savings:

Annual savings

$$= \frac{(\text{Credit sales} \times \text{Annual interest rate} \times \text{Number of days average collection period is lowered})}{365}$$

where

credit sales = company's annual credit sales in dollars,

annual interest rate = the interest rate at which the company borrows money,

and number of days average collection period is lowered = the difference between the previous year's average collection period ratio and the current one.

Example

Sam's Appliance Shop's average collection period ratio is 50 days. Suppose that the previous year's average-collection-period ratio was 58 days, an eight-day improvement. The company's credit sales for the most recent year were $1,309,589. If Sam borrows money at 8.75%, this six-day improvement has generated savings for Sam's Appliance Shop of

$$\text{Savings} = \frac{\$1{,}309{,}589 \times 8.75\% \times 8 \text{ days}}{365 \text{ days}} = \$2{,}512$$

By collecting his accounts receivable just eight days faster on average, Sam has saved his business more than $2,512! Of course, if a company's average-collection-period ratio rises, the same calculation will tell the owner how much that change costs.

Source: Based on Jill Andresky Fraser, "Days Saved, Thousands Earned," Inc., November, 1995 p. 98.

going because their credit customers are paying their bills in 45, 60, or even 90 days instead of the desired 30. Slow receivables are a real danger because they usually lead to a cash crisis that threatens a company's survival. Table 11.1 shows how to calculate the savings associated with lowering a company's average-collection-period ratio.

average-payable-period ratio measures the number of days it takes a company to pay its accounts payable.

8. Average-Payable-Period Ratio. The converse of the average-collection-period ratio, the **average-payable-period ratio** (or days payables outstanding, DPO) tells the average number of days it takes a company to pay its accounts payable. Like the average collection period, it is measured in days. To compute this ratio, an entrepreneur first calculates the payables turnover ratio. Sam's payables turnover ratio is as follows:

$$\text{Payables turnover ratio} = \frac{\text{Purchases}}{\text{Accounts payable}} = \frac{\$939{,}827}{\$152{,}580} = 6.16 \text{ times/year}$$

To find the average payable period, use the following computation:

$$\text{Average-payable-period ratio} = \frac{\text{Days in accounting period}}{\text{Payables turnover ratio}} = \frac{365 \text{ days}}{6.16 \text{ times per year}} = 59.3 \text{ days}$$

Sam's Appliance Shop takes an average of 59 days to pay its accounts with vendors and suppliers.

One of the most meaningful comparisons for this ratio is against the credit terms suppliers offer (or an average of the credit terms offered). If the average payable ratio slips beyond vendors' credit terms, a company probably suffers from a sloppy accounts-payable procedure or from cash shortages, and its credit rating is in danger. An excessively high average-payables-period ratio indicates the presence of a significant amount of past-due accounts payable. Although sound cash management calls for a business owner to keep his or her cash as long as possible, slowing payables too drastically can severely damage the company's credit rating. If this ratio is significantly lower than vendors' credit terms, the company is not using its cash most effectively by paying vendors too quickly.

Comparing a company's average-collection-period ratio (DSO) to its average-payable period ratio (DPO) gives owners meaningful insight into their companies' cash position. Ideally, the average payable period matches (or exceeds) the time it takes to convert inventory into sales and ultimately into cash. In this case, the company's vendors are financing its inventory and its credit sales. Online retailer Amazon benefits from this situation. On average, the company does not pay its vendors until 127 days after it collects payments from its customers.[22] Subtracting DSO from DPO yields a company's **float**, the net number of days of cash that flow into or out of a company. Sam's Appliance Shop's float is

float
the net number of days of cash flowing into or out of a company; float = days payables outstanding (DPO) – days sales outstanding (DSO).

$$\text{Float} = \text{DPO} - \text{DSO} = 59.3 \text{ days} - 50.0 \text{ days} = 9.3 \text{ days}$$

A positive value for float means that cash will accumulate in a company over time, but a negative number means that the company's cash balance will diminish over time. Multiplying float by the company's average daily sales tells Sam how much the company's cash balance will change over the course of the year as a result of its collection and payable processes:

$$\text{Change in cash position} = \$1{,}870{,}841 \div 365 \text{ days} \times 9.3 \text{ days} = \$47{,}668$$

We will see the impact that these three operating ratios—inventory turnover, accounts receivable, and accounts payable—have on a small company's cash flow in the next chapter.

9. Net-Sales-to-Total-Assets Ratio. A small company's **net-sales-to-total-assets** (also called the **total-asset-turnover) ratio** is a general measure of its ability to generate sales in relation to its assets. It describes how productively the firm employs its assets to produce sales revenue. The total-assets-turnover ratio is calculated as follows:

net-sales-to-total-assets (also called the total-asset-turnover) ratio
measures a company's ability to generate sales in relation to its asset base.

$$\text{Total-assets-turnover ratio} = \frac{\text{Net sales}}{\text{Net total assets}} = \frac{\$1{,}870{,}841}{\$847{,}655} = 2.21:1$$

Sam's Appliance Shop is generating $2.21 in sales for every dollar of assets.

The denominator of this ratio, net total assets, is the sum of all of a company's assets (cash, inventory, land, buildings, equipment, tools, and everything it owns) less depreciation. This ratio is meaningful only when compared to that of similar firms in the same industry category. Monitoring it over time is very helpful for maintaining a sufficient asset base as a small business grows. A total-assets-turnover ratio below the industry average indicates that a small company is not generating an adequate sales volume for its asset size.

A recent survey by the National Federation of Independent Business reports "poor sales" as the one of the most commonly cited problems among small businesses, ranking just behind perennial top problems "government regulation" and "taxes."[23] If a company's sales fall below its break-even point, it operates at a loss, which is not sustainable.

profitability ratios
indicate how efficiently a small company is being managed.

PROFITABILITY RATIOS **Profitability ratios** indicate how efficiently a small company is being managed. They provide the owner with information about a company's ability to use its resources to generate a profit, its "bottom line."

net-profit-on-sales ratio
measures a company's profit per dollar of sales.

10. Net-Profit-on-Sales Ratio. The **net-profit-on-sales ratio** (also called the profit-margin-on-sales ratio or the net-profit-margin ratio) measures a company's profit per dollar of sales.

This ratio (which is expressed as a percentage) shows the portion of each sales dollar remaining after deducting all expenses. The profit margin on sales is calculated as follows:

$$\text{Net-profit-on-sales ratio} = \frac{\text{Net profit}}{\text{Net sales}} = \frac{\$60,629}{\$1,870,841} = 3.24\%$$

For every dollar in sales Sam's Appliance Shop generates, Sam keeps 3.24 cents in profit.

A recent study by Sageworks shows that the average net profit margin for privately held companies normally falls between 3 and 7 percent, but this ratio varies from one industry to another. The retail industry typically produces a net-profit-on-sales ratio that falls between 2 and 4 percent, but profit margins in the healthcare field range between 10 and 16 percent.[25] If a company's profit margin on sales is below the industry average, it may be a sign that its prices are too low, that its costs are excessively high, or both.

ENTREPRENEURIAL PROFILE: Villa Enterprises Villa Enterprises operates 360 restaurants, including the Villa Fresh Italian Kitchen chain, Office Beer Bar & Grill restaurants, and several other specialty restaurants serving salads and Asian and Mexican dishes. Andrew Steinberg, senior vice president of business operations, says Villa is able to reduce the impact of increasing food costs by buying in volume. Villa buys food products in half and full truckloads to gain economies of scale. Although it does tie up more cash in inventory, staying ahead of price increases has helped maintain strong profits.[26] ■

A natural reaction to low profitability ratios is to embark on a cost-cutting effort. Although minimizing costs does improve profitability, entrepreneurs must be judicious in their cost cutting, taking a strategic approach rather than imposing across-the-board cuts. The key is to reduce costs without diminishing customer service and damaging employee morale. Cutting costs in areas that are vital to operating success—such as a retail jeweler eliminating its advertising expenditures or a restaurant reducing the quality of its ingredients—usually hurts a company's ability to compete and can lead to failure. For instance, choosing to lay off workers, a common reaction at many companies facing financial challenges, often backfires. Not only does a company risk losing talented workers and the knowledge they have built up over time, but research also shows that repeated rounds of layoffs destroy the morale and productivity of the remaining workers.[27]

If a company's net-profit-on-sales ratio is excessively low, the owner first should check the gross profit margin (net sales minus cost of goods sold expressed as a percentage of net sales). Of course, a reasonable gross profit margin varies from industry to industry. For instance, a service company may have a gross profit margin of 75 percent, while a manufacturer's may be 35 percent. The key is to know what a reasonable gross profit margin is for your particular business. If this margin slips too low, the company's future is in immediate jeopardy. An inadequate gross profit margin cannot cover all of a company's business expenses and still be able to generate a profit.

ENTREPRENEURIAL PROFILE: Chris Siversen: Maritime Parc Maritime Parc restaurant, in Jersey City, New Jersey, is feeling the effects of rising wholesale prices of beef and shrimp. Chris Siversen, chef and co-owner, says that rather than increase prices, his restaurant has been forced to absorb rising food costs. In addition, the continued soft economy does not allow him to increase prices. As a result, profit margins have continued to decline.[24] ■

operating leverage
a situation in which increases in operating efficiency mean that expenses as a percentage of sales revenue flatten or even decline.

Monitoring the net profit margin is especially important for fast-growing companies in which sales are climbing rapidly. Unbridled growth can cause expenses to rise faster than sales, eroding a company's net profit margin. Success can be deceptive: Sales are rising, but profits are shrinking. Ideally, a company reaches a point at which it achieves **operating leverage**, a situation in which increases in operating efficiency mean that expenses as a percentage of

revenues flatten or even decline. As a result, the company's net profit margin climbs as grows.

11. Net-Profit-to-Assets Ratio. The **net-profit-to-assets (return-on-assets) ratio** tells how much profit a company generates for each dollar of assets it owns. This ratio describes how efficiently a business is putting to work all of the assets it owns to generate a profit. It tells how much net income an entrepreneur is squeezing from each dollar's worth of the company's assets. It is calculated as follows:

net-profit-to-assets (return-on-assets) ratio
measures how much profit a company generates for each dollar of assets that it owns.

$$\text{Net-profit-on-assets ratio} = \frac{\text{Net profit}}{\text{Total assets}}$$

$$= \frac{\$60,629}{\$847,655}$$

$$= 7.15\%$$

Sam's Appliance shop earns a return of 7.15 percent on its asset base. This ratio provides clues about the asset intensity of an industry. Return-on-assets ratios that are below 5 percent are indicative of asset-intense industries that require heavy investments in assets to stay in business (e.g., manufacturing and railroads). Return-on-assets ratios that exceed 20 percent tend to occur in asset-light industries such as business or personal services—for example, advertising agencies and computer services. A net-profit-to-assets ratio that is below the industry average suggests that a company is not using its assets efficiently to produce a profit. Another common application of this ratio is to compare it to the company's cost of borrowed capital. Ideally, a company's return-on-assets ratio should exceed the cost of borrowing money to purchase those assets. Companies that experience significant swings in the value of their assets over the course of a year often use an average value of the asset base over the accounting period to get a more realistic estimate of this ratio.

12. Net-Profit-to-Equity Ratio. The **net-profit-to-equity ratio** (or return on net worth ratio) measures the owners' rate of return on investment (ROI). Because it reports the percentage of the owners' investment in the business that is being returned through profits annually, it is one of the most important indicators of a firm's profitability or a management's efficiency. The net-profit-to-equity ratio is computed as follows:

net-profit-to-equity ratio
measures the owners' rate of return on investment.

$$\text{Net-profit-to-equity ratio} = \frac{\text{Net profit}}{\text{Owners' equity (or net worth)}}$$

$$= \frac{\$60,629}{\$267,655}$$

$$= 22.65\%$$

Sam is earning 22.65 percent on the money he has invested in this business.

This ratio compares profits earned during the accounting period with the amount the owner has invested in the business at the time. If this interest rate on the owners' investment is excessively low, some of this capital might be better employed elsewhere. A business should produce a rate of return that exceeds its cost of capital.

Interpreting Business Ratios

LO4
Explain how to interpret financial ratios.

Ratios are useful yardsticks when measuring a small firm's performance and can point out potential problems before they develop into serious crises. However, calculating these ratios is not enough to ensure proper financial control. In addition to knowing how to calculate these ratios, entrepreneurs must understand how to interpret them and apply them to managing their businesses more effectively and efficiently. Many entrepreneurs use key financial ratios as a performance dashboard that help them manage by continuously assessing trends in the financial strength of their businesses.

You Be the Consultant

All Is Not Paradise in Eden's Garden: Part 1

Joe and Kaitlin Eden, co-owners of Eden's Garden, a small nursery, lawn, and garden supply business, have just received their year-end financial statements from their accountant. At their last meeting with their accountant, Shelley Edison, three months ago, the Edens had mentioned that they seemed to be having trouble paying their bills on time. "Some of our suppliers have threatened to put us on 'credit hold,'" said Joe.

Balance Sheet, Eden's Garden

Assets		
Current Assets		
Cash		$6,457
Accounts Receivable	$29,152	
Less Allowance for Doubtful Accounts	$3,200	$25,952
Inventory		$88,157
Supplies		$7,514
Prepaid Expenses		$1,856
Total Current Assets		$129,936
Fixed Assets		
Land		$59,150
Buildings	$51,027	
Less Accumulated Depreciation	$2,061	$48,966
Autos	$24,671	
Less Accumulated Depreciation	$12,300	$12,371
Equipment	$22,375	
Less Accumulated Depreciation	$1,250	$21,125
Furniture and Fixtures	$10,295	
Less Accumulated Depreciation	$1,000	$9,295
Total Fixed Assets		$150,907
Intangibles (Goodwill)		$0
Total Assets		$280,843
Liabilities		
Current Liabilities		
Accounts Payable		$54,258
Notes Payable		$20,150
Credit Line Payable		$8,118
Accrued Wages/Salaries Payable		$1,344
Accrued Interest Payable		$1,785
Accrued Taxes Payable		$1,967
Total Current Liabilities		$87,622
Long-Term Liabilities		
Mortgage		$72,846
Note Payable		$47,000
Total Long-Term Liabilities		$119,846
Owner's Equity		
Sam Lloyd, Capital		$73,375
Total Liabilities and Owner's Equity		$280,843

Income Statement, Eden's Garden

Net Sales Revenue*		**$689,247**
Cost of Goods Sold		
Beginning Inventory, 1/1/xx	$78,271	
+ Purchases	$403,569	
Goods available for Sale	$481,840	
− Ending Inventory, 12,31/xx	$86,157	
Cost of Goods Sold		$395,683
Gross Profit		$293,564
Operating Expenses		
Advertising	$22,150	
Insurance	$9,187	
Depreciation		
Building	$26,705	
Autos	$7,895	
Equipment	$11,200	
Salaries	$116,541	
Uniforms	$4,018	
Repairs and Maintenance	$9,097	
Travel	$2,658	
Entertainment	$2,798	
Total Operating Expenses		$212,249
General Expenses		
Utilities	$7,987	
Telephone	$2,753	
Professional Fees	$3,000	
Postage	$1,892	
Payroll Taxes	$11,589	
Total General Expenses		$27,221
Other Expenses		
Interest Expense	$21,978	
Bad check Expense	$679	
Miscellaneous expense	$1,248	
Total Other Expenses		$23,905
Total Expenses		$263,375
Net Income		$30,189

*Credit sales represented $289,484 of this total.

You Be the Consultant *(continued)*

"I think you need to sit down with me very soon and let me show you how to analyze your financial statements so you can see what's happening in your business," Edison told them at that meeting. Unfortunately, that was the beginning of Eden's Garden's busy season, and the Edens were so busy running the company that they never got around to setting a time to meet with Shelley.

"Now that business has slowed down a little, perhaps we should call Shelley and see what she can do to help us understand what our financial statements are trying to tell us," said Kaitlin.

"Right. Before it's too late to do anything about it," said Joe, pulling out the financial statements presented here.

1. Assume the role of Shelley Edison. Using the financial statements for Eden's Garden, calculate the 12 ratios covered in this chapter.
2. Do you see any ratios that, on the surface, look suspicious? Explain.

ENTREPRENEURIAL PROFILE: Peter Smith: Golden Spiral Creative Peter Smith, president and COO of Golden Spiral Creative, a branding and marketing agency based in Nashville, Tennessee, uses a spreadsheet he developed to create a company dashboard. The first key metric is overhead. "This has every employee's salary listed, along with employer taxes (FICA & FUTA), rent, and any other monthly expense," says Smith. "I use this to determine our monthly overhead. It also allows me to quickly project how a new hire or subscription would alter my overhead." Smith also has a section on the same spreadsheet that includes all monthly retainers the company is paying out to its independent contractors. "I also have a section for cost accounting to determine my break-even rate per billable hour," says Smith. "We bill on an hourly basis so this is really helpful." Finally, his dashboard acts as a calculator he can use to help bid on new projects. "I enter the total number of hours that we expect to work and what we are charging for that project," explains Smith. "From there I enter any contractor expenses I will have to pay. The formula takes our break-even per billable hour number and the project hours to determine what that project 'costs' us in terms of human capital. All of this together calculates out net income and profit margin on a per project basis. I can toggle the numbers a bit to see how and changes affect our profit margin."[28] ■

Peter Smith Publisher, Inc.

Not every business measures its success with the same ratios. In fact, key performance ratios vary dramatically across industries and even within different segments of the same industry. Entrepreneurs must know and understand which ratios are most crucial to their companies' success and focus on monitoring and controlling those indicators. Sometimes business owners develop ratios and measures that are unique to their own operations to help them achieve success. Known as **critical numbers (or key performance indicators, KPIs)**, these indicators measure key financial and operational aspects of a company's performance. When these critical numbers are headed in the right direction, a business is on track to achieve its objectives. Norm Brodsky, owner of a successful document storage and delivery business in New York City, breaks his business into four categories and tracks critical numbers for each one. Every Monday morning, he receives a report comparing the previous week's critical numbers to those of the previous 28 weeks and the same week for the previous three years. With these figures he can quickly assess how the business is performing. If there are problems with any KPI, he can seek out more information to identify any problems or concerns.[29] Examples of critical numbers at other companies include the following:

- A bank's "happy-to-grumpy" ratio, which measures the level of employee satisfaction. Studies show that employees at the bank who score high on this index are more productive and receive higher customer satisfaction ratings.[30]
- Sales per labor hour at a supermarket.
- The number of referrals for a healthcare facility. Managers use this number to predict the number of new patients they can expect and to identify swings in patient revenue. This information helps with staffing decisions and managing cash flow.

- Food costs as a percentage of sales for a restaurant. When rapidly rising flour and cheese prices pushed food costs as a percentage of sales from the normal 34 percent to 40 percent at Mark Parry's pizza restaurant, he was forced to raise prices. Parry knows his restaurant will not make a profit when food costs get above 40 percent.[31] At Dos Caminos, a Mexican restaurant in New York City, chef Ivy Stark's goal is to keep the restaurant's food cost at or below 26 percent of sales. Stark relies on a five-page spreadsheet generated each morning to keep food costs under control.[32]
- The utilization ratio, billable hours as a percentage of total hours worked at an Internet service provider.
- Site traffic and sales dollars per transaction, two critical numbers for an ecommerce business to monitor on a daily basis.
- The load factor, the percentage of seats filled with passengers at an airline.[33]

Critical numbers may be different for two companies that compete in the same industry. The key is identifying *your* company's critical numbers, monitoring them, and then driving them in the right direction. That requires communicating the importance of these critical numbers to employees and giving them feedback on how well the business is achieving them. For instance, one California retail chain established the daily customer count and the average sale per customer as its critical numbers. The company organized a monthly contest with prizes and posted charts tracking each store's performance. Soon, employees were working hard to improve their stores' performances over the previous year and to outdo other stores in the chain. The healthy rivalry among stores boosted the company's performance significantly.[34]

Another valuable way to use ratios is to compare them with those of similar businesses in the same industry. By comparing their companies' financial statistics to industry averages, entrepreneurs are able to locate problem areas and maintain adequate financial controls. Known as **financial benchmarking**, comparing a company's key financial indicators to averages from many firms of similar size in the same industry, can help identify problem areas that the company's own history may not show. Benchmarking also is an effective way to set KPIs to ensure your business is at least doing as well as others in your industry, if not exceeding their performance.

financial benchmarking
a process in which entrepreneurs compare a company's key financial indicators to averages from many companies of similar size in the same industry to identify problem areas that the company's own history may not show.

The principle behind calculating these ratios and comparing them to industry norms is the same as that of most medical tests in the healthcare profession. Just as a healthy person's blood pressure and cholesterol levels should fall within a range of normal values, so should a financially healthy company's ratios. A company cannot deviate too far from these normal values and remain successful for long. When deviations from "normal" do occur (and they will), a business owner should focus on determining the cause of the deviations. In some cases, deviations are the result of sound business decisions, such as taking on inventory in preparation for the busy season, investing heavily in new technology, and others. In other instances, however, ratios that are out of the normal range for a particular type of business are indicators of what could become serious problems for a company. When comparing a company's critical numbers to industry standards, entrepreneurs should ask the following questions:

- Is there a significant difference in my company's ratio and the industry average?
- If so, is the difference meaningful?
- Is the difference good or bad?
- What are the possible causes of this difference? What is the most likely cause?
- Does this cause require that I take action?
- If so, what action should I take to correct the problem?

When used properly, critical numbers can help owners to identify potential problem areas in their businesses early on—*before* they become crises that threaten their very survival. Several organizations regularly compile and publish operating statistics, including key ratios, that summarize the financial performance of many businesses across a wide range of industries. The local library should subscribe to most of these publications:

Risk Management Association. Founded in 1914, the RMA publishes its *Annual Statement Studies*, showing ratios and other financial data for more than 760 different

industrial, wholesale, retail, and service categories that are organized by NAICS and SIC code.

Dun & Bradstreet, Inc. Since 1932, Dun & Bradstreet has published *Industry Norms and Key Business Ratios*, which covers more than 800 business categories. Dun & Bradstreet also publishes Cost of Doing Business, a series of operating ratios compiled from the Statistics of Income reports of the Internal Revenue Service (IRS).

Bizminer. This industry financial data can be segmented by both company size and geographic location.

Almanac of Business and Financial Ratios. Published by CCH, this almanac reports comparative financial data and ratios for nearly 200 industries by company size.

Standard & Poor's Industry Surveys. In addition to providing information on financial ratios and comparative financial analysis, these surveys also contain useful details on industry operations, current industry trends, and key terms in the industry.

Industry Spotlight. Published by Schonfeld & Associates, this publication, which can be customized for any one of 250 industries, contains financial statement data and key ratios gleaned from IRS tax returns. *Industry Spotlight* also provides detailed financial information for both profitable companies and those with losses. Schonfeld & Associates also publishes *IRS Corporate Financial Ratios*, a comprehensive reference book that features 76 financial ratios for more than 250 industries using NAICS codes.

Online resources. Many companies publish comparative financial resources online. Some require subscriptions, but others are free:

- Bizstats publishes common-size financial statements and ratios for 95 business categories for sole proprietorships, S corporations, and corporations.
- Reuters provides an overview of many industries that includes industry trends and news as well as financial ratios.
- A subscription to Lexis/Nexis allows users to view detailed company profiles, including financial reports and analysis, for publicly held companies.

Industry associations. Virtually every type of business is represented by a national trade association that publishes detailed financial data compiled from its membership. For example, owners of small supermarkets could contact the National Association of Retail Grocers or check the *Progressive Grocer*, its trade publication, for financial statistics relevant to their operations.

Government agencies. Several government agencies, including the IRS, the Federal Trade Commission, the Department of Commerce, the Census Bureau, the Department of Agriculture, and the Securities and Exchange Commission, periodically publish reports that provide financial operating data on a variety of industries, although the categories are more general. For instance, the IRS publishes *Statistics of Income*, which includes income statement and balance sheet statistics that are compiled from income tax returns and are arranged by industry, asset size, and annual sales. Every five years (years ending in 2 and 7), the Census Bureau publishes the *Economic Census* (www.census.gov/econ/census), which provides general industry statistics and ratios.

What Do All of These Numbers Mean?

Learning to interpret financial ratios just takes a little practice! This section and Table 11.2 show you how it's done by comparing the ratios from the operating data already computed for Sam's to those taken from the RMA's *Annual Statement Studies*. (The industry median is the ratio falling exactly in the middle when sample elements are arranged in ascending or descending order.) Calculating the variance from the industry median—(company ratio – industry median) ÷ industry median—helps entrepreneurs identify the areas in which the company is out of line with the typical company in the industry.

When comparing ratios for their individual businesses to published statistics, entrepreneurs must remember that the comparison is made against averages. An entrepreneur should strive to achieve ratios that are at least as good as these average figures. The goal should be to manage

TABLE 11.2 Ratio Analysis: Sam's Appliance Shop versus the Industry Median

Sam's Appliance Shop	Industry Median	Variance (%)
Liquidity Ratios—Tell whether a small business will be able to meet its maturing obligations as they come due.		
1. Current Ratio = 1.87:1	1.60:1	16.7%
Sam's Appliance Shop falls short of the rule of thumb of 2:1, but its current ratio is above the industry median by a significant amount. Sam's should have no problem meeting its short-term debts as they come due. By this measure, the company's liquidity is solid.		
2. Quick Ratio = 0.63:1	0.50:1	25.9%
Again, Sam's is below the rule of thumb of 1:1, but the company passes this test of liquidity when measured against industry standards. Sam's relies on selling inventory to satisfy short-term debt (as do most appliance shops). If sales slump, the result could be liquidity problems for Sam's.		
Leverage Ratios—Measure the financing supplied by the company's owners against that supplied by its creditors as a gauge of the depth of a company's debt.		
3. Debt Ratio = 0.68:1	0.62:1	10.4%
Creditors provide 68 percent of Sam's total assets, which is above the industry median of 62 percent. Although Sam's does not appear to be overburdened with debt, the company might have difficulty borrowing additional money, especially from conservative lenders.		
4. Debt-to-Net-Worth Ratio = 2.20:1	2.30:1	−4.5%
Sam's Appliance Shop owes $2.20 to creditors for every $1 the owners have invested in the business (compared to $2.30 in debt to every $1 in equity for the typical business). Although this is not an exorbitant amount of debt by industry standards, many lenders and creditors see Sam's as "borrowed up." Borrowing capacity is somewhat limited because creditors' claims against the business are more than twice those of the owners.		
5. Times-Interest-Earned Ratio = 2.52:1	2.10:1	20.1%
Sam's earnings are high enough to cover the interest payments on its debt by a factor of 2.52, better than the typical firm in the industry, whose earnings cover its interest payments just 2.1 times. Sam's Appliance Shop has a comfortable cushion when meeting its interest payments, although some lenders want to see times-interest-earned ratios of at least 3:1.		
Operating Ratios—Evaluate a company's overall performance and show how effectively it is putting its resources to work.		
6. Average-Inventory-Turnover Ratio = 2.05 times/year	4.4 times/year	−53.5%
Inventory is moving through Sam's at a very slow pace, *half* that of the industry median. The company has a problem with slow-moving items in its inventory and, perhaps, too much inventory. Which items are they, and why are they slow moving? Does Sam need to drop some product lines?		
7. Average-Collection-Period Ratio = 50.0 days	10.5 days	376.3%
Sam's Appliance Shop collects the average accounts receivable after 50 days, compared with the industry median of about 11 days, nearly five times longer. A more meaningful comparison is against Sam's credit terms; if credit terms are net 30 (or anywhere close to that), Sam's has a dangerous collection problem, one that drains cash and profits and demands *immediate* attention!		
8. Average-Payable-Period Ratio = 59.3 days	23.0 days	158.1%
Sam's payables are significantly slower than those of the typical firm in the industry. Stretching payables too far could seriously damage the company's credit rating, causing suppliers to cut off future trade credit. This could be a sign of cash flow problems or a sloppy accounts-payable procedure. This problem, which indicates that the company suffers from cash flow problems, also demands *immediate* attention.		

TABLE 11.2 Ratio Analysis: Sam's Appliance Shop versus the Industry Median (*continued*)

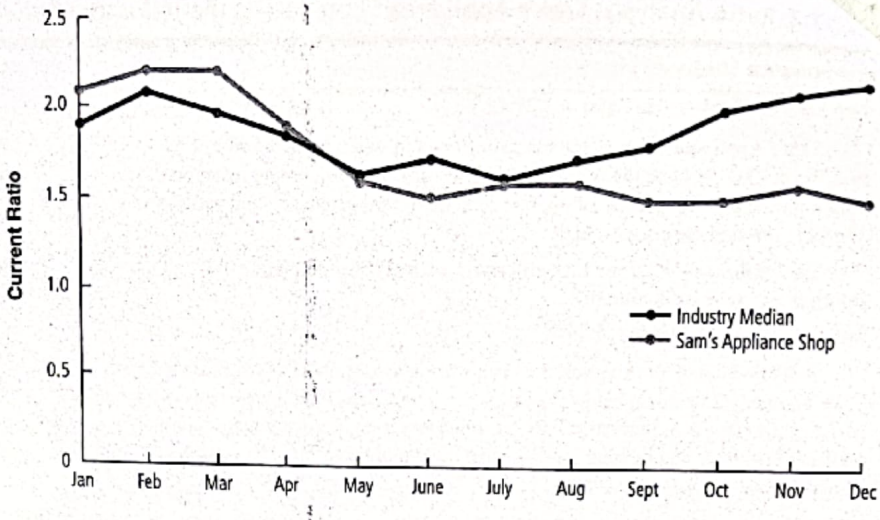
Sam's Appliance Shop	Industry Median	Variance (%)
9. Net-Sales-to-Total-Assets Ratio = 2.21:1	3.4:1	−35.1%
Sam's Appliance Shop is not generating enough sales, given the size of its asset base. This could be the result of a number of factors—improper inventory, inappropriate pricing, poor location, poorly trained sales personnel, and many others. The key is to find the cause—*fast*!		
Profitability Ratios—Measure how efficiently a firm is operating and offer information about its bottom line.		
10. Net-Profit-on-Sales Ratio = 3.24%	4.3%	−24.6%
After deducting all expenses, 3.24 cents of each sales dollar remains as profit for Sam's—nearly 25 percent below the industry median. Sam should review his company's gross profit margin and investigate its operating expenses, checking them against industry standards and looking for those that are out of balance.		
11. Net-Profit-to-Assets Ratio = 7.15%	4.0%	78.8%
Sam's generates a return of 7.15% for every $1 in assets, which is nearly 79 percent *above* the industry median. Given his asset base, Sam is squeezing an above-average return from his company. This could be an indication that Sam's business is highly profitable; however, given the previous ratio, this is unlikely. It is more likely that Sam's asset base is thinner than the industry average.		
12. Net-Profit-to-Equity Ratio = 22.65%	16.0%	41.6%
Sam's Appliance Shop's owners are earning 22.65 percent on the money they have invested in the business. This yield is well above the industry median and, given the previous ratio, is more a result of the owner's relatively low investment in the business than an indication of its superior profitability. Sam is using O.P.M. (other people's money) to generate a profit.		

the business so that its financial performance is above average. As they compare their company's financial performance to those covered in the published statistics, they inevitably will discern differences between them. They should note those items that are substantially out of line from the industry average. However, a ratio that varies from the average does not *necessarily* mean that the small business is in financial jeopardy. Instead of making drastic changes in financial policy, entrepreneurs must explore *why* the figures are out of line.

ENTREPRENEURIAL PROFILE: Greg Smith: Petra Group Greg Smith, CEO of Petra Group, a systems integrator with $1.5 million in annual sales, once gave little thought to comparing his company's financial performance against industry standards. Then Petra Group's sales flattened, and Smith's company faced the prospect of losing money for the first time. Smith worked with an accounting firm, using information from the RMA Annual Statement Studies and a nonprofit organization that provides similar studies, to analyze his company's financial position. Comparing his numbers to industry statistics, Smith quickly saw that payroll expenses for his 15-person company were too high to allow the company to generate a profit. He also discovered that Petra Group's debt ratio was too high. To restore his company's financial strength, Smith reduced his staff by two and began relying more on temporary employees and independent contractors. He realigned Petra Group's financing, reducing the company's line of credit from $100,000 to just $35,000. The analysis also revealed several strengths for the company. For instance, the company's average collection period was 36.5 days compared to an industry average of 73 days! Smith continues to use ratio comparisons to make key decisions for his company, and he credits the initial financial analysis with getting his company back on the track to profitability.[35] ■

In addition to comparing ratios to industry averages, owners should analyze their firms' financial ratios over time. By themselves, these ratios are "snapshots" of a company's financial position at a single instant; however, by examining these trends over time, an entrepreneur can detect gradual shifts that otherwise might go unnoticed until a financial crisis is looming (see Figure 11.5).

FIGURE 11.5
Trend Analysis of Ratio



break-even point
the level of operation (sales dollars or production quantity) at which a company neither earns a profit nor incurs a loss.

LO5
Conduct a break-even analysis for a small company.

Break-Even Analysis

Another key component of every sound financial plan is a break-even (or cost-volume-profit) analysis. A small company's **break-even point** is the level of operation (typically expressed as sales dollars or production quantity) at which it neither earns a profit nor incurs a loss. At this level of activity, sales revenue equals expenses—that is, the firm "breaks even." A business that

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All Is Not Paradise in Eden's Garden: Part 2

Remember Joe and Kaitlin Eden, co-owners of Eden's Garden? Assume the role of Shelley Edison, their accountant. Tomorrow, you have scheduled a meeting with them to review their company's financial statements and to make recommendations about how they can improve their company's financial position. Use the following worksheet to summarize the ratios you calculated earlier in this chapter. Then compare them against the industry averages for businesses of a similar size from the Bizminer's *Industry Financial Report*.

Ratio Comparison

Ratio	Eden's Garden	Nursery, Garden Center, and Farm Supply Stores Industry Median*
Liquidity Ratios		
Current ratio		2.27
Quick ratio		0.84
Leverage Ratios		
Debt ratio		0.57
Debt-to-net-worth ratio		1.34
Times-interest-earned ratio		1.29
Operating Ratios		
Average-inventory-turnover ratio		6.74
Average-collection-period ratio		10.79 days
Average-payable-period ratio		37.9 days
Net-sales-to-total-assets ratio		2.95
Profitability Ratios		
Net-profit-on-sales ratio		5.51%
Net-profit-to-assets ratio		16.26%
Net-profit-to-equity ratio		38.04%

*Bizminer's *Industry Financial Report*.

1. Analyze the comparisons you have made of Eden's Garden's ratios with those from Bizminer. What red flags do you see?
2. What might be causing the deviations you have observed?
3. What recommendations can you make to the Edens to improve their company's financial performance in the future?

erates sales that are greater than its break-even point will produce a profit, but one that operates below its break-even point will incur a net loss. Many entrepreneurs leave their own salary out of a break-even calculation. This is *not* a wise approach. Although the entrepreneur may forgo paychecks during start-up, the business does not truly break even until the entrepreneur is able to earn a market salary from the business. By analyzing costs and expenses, an entrepreneur can calculate the minimum level of activity required to keep a company in operation. These techniques can then be refined to project the sales needed to generate the desired profit. Most potential lenders and investors expect entrepreneurs to prepare a break-even analysis to assist them in evaluating the earning potential of the new business. In addition to its being a simple, useful screening device for financial institutions, break-even analysis can also serve as a planning device for entrepreneurs. It can show an entrepreneur just how unprofitable a poorly planned business venture is likely to be.

Calculating the Break-Even Point

An entrepreneur can calculate a company's break-even point by using a simple mathematical formula. To begin the analysis, the entrepreneur must determine fixed costs and variable costs. **Fixed expenses** are those that do not vary with changes in the volume of sales or production (e.g., rent, depreciation expense, insurance, lease or loan payments, and others). **Variable expenses**, on the other hand, vary directly with changes in the volume of sales or production (e.g., raw material costs, sales commissions, hourly wages, and others).

fixed expenses
expenses that do not vary with changes in the volume of sales or production.

variable expenses
expenses that vary directly with changes in the volume of sales or production.

Some expenses cannot be neatly categorized as fixed or variable because they contain elements of both. These semivariable expenses change, although not proportionately, with changes in the level of sales or production (electricity is one example). These costs remain constant up to

"CONSIDER YOURSELF LUCKY, EDDIE. 'BREAK-EVEN' IS THE NEW 'WIN-WIN'."

Harley Schwardon/www.CartoonStock.com

a particular production or sales volume and then climb as that volume is exceeded. To calculate the break-even point, an entrepreneur must separate these expenses into their fixed and variable components. A number of techniques are available (which are beyond the scope of this text), but a good cost accounting system can provide the desired results.

Here are the steps an entrepreneur must take to compute the break-even point using an example of a typical small business, the Magic Shop:

Step 1. ***Forecast the expenses the business can expect to incur.*** With the help of a forecast for a new venture or a budget for an operating small business, an entrepreneur can develop estimates of sales revenue, cost of goods sold, and expenses for the upcoming accounting period. The Magic Shop expects net sales of $950,000 in the upcoming year, with a cost of goods sold of $646,000 and total expenses of $236,500.

Step 2. ***Categorize the expenses estimated in step 1 into fixed expenses and variable expenses.*** Separate semivariable expenses into their component parts. From the budget, the owner anticipates variable expenses (including the cost of goods sold) of $705,125 and fixed expenses of $177,375.

Step 3. ***Calculate the ratio of variable expenses to net sales.*** For the Magic Shop, this percentage is $705,125 ÷ $950,000 = 74 percent. The Magic Shop uses 74 cents out of every sales dollar to cover variable expenses, which leaves 26 cents ($1.00 − 0.74) of each sales dollar as a contribution margin to cover fixed costs and make a profit.

Step 4. ***Compute the break-even point by inserting this information into the following formula:***

$$\text{Break-even sales (\$)} = \frac{\text{Total fixed cost}}{\text{Contribution margin expressed as a percentage of sales}}$$

For the Magic Shop,

$$\text{Break-even sales} = \frac{\$177{,}375}{0.26} = \$682{,}212$$

Thus, the Magic Shop will break even with sales of $682,212. At this point, sales revenue generated will just cover total fixed and variable expense. The Magic Shop will earn no profit and will incur no loss. We can verify this with the following calculations:

Sales at break-even point	$ 682,212
−Variable expenses (74% of sales)	−504,837
Contribution margin	177,375
−Fixed expenses	−177,375
Net profit (or net loss)	$ 0

Some entrepreneurs find it more meaningful to break down their companies' annual break-even point into a daily sales figure. If the Magic Shop will be open 312 days per year, the average daily sales it must generate just to break even is $682,212 ÷ 312 days = $2,187 per day.

Adding a Profit

What if the Magic Shop's owner wants to do *better* than just break even? This should be the goal of all entrepreneurs. Just as a track coach tell runners to run through the finish line and football coaches want their players to run over the goal line into the endzone, an entrepreneur should never be satisfied with simply reaching break even. The goal is to move through break-even into profitability. Break-even analysis can be adjusted to consider this goal. Suppose the

ner expects a reasonable profit (before taxes) of $80,000. What level of sales must the Magic Shop achieve to generate this? The entrepreneur can calculate this by treating the desired profit as if it were a fixed cost, modifying the break-even formula to include the desired net income:

$$\text{Sales (\$)} = \frac{\text{Total fixed expenses} + \text{Desired net income}}{\text{Contribution margin expressed as a percentage of sales}}$$

$$= \frac{\$177{,}375 + \$80\,000}{0.26}$$

$$= \$989{,}904$$

To achieve a net profit of $80,000 (before taxes), the Magic Shop must generate net sales of $989,904. Once again, if we convert this annual sales volume into a daily sales volume, we get $989,904 ÷ 312 days = $3,173 per day.

Break-Even Point in Units

Some small businesses prefer to express the break-even point in units produced or sold instead of in dollars. Manufacturers often find this approach particularly useful. The following formula computes the break-even point in units:

$$\text{Break-even volume} = \frac{\text{Total fixed costs}}{\text{Sales price per unit} - \text{Variable cost per unit}}$$

For example, suppose that Trilex Manufacturing Company estimates its fixed costs for producing its line of small appliances at $390,000. The variable costs (including materials, direct labor, and factory overhead) amount to $12.10 per unit, and the selling price per unit is $17.50. Trilex computes its contribution margin this way:

$$\text{Contribution margin} = \text{Price per unit} - \text{Variable cost per unit}$$

$$= \$17.50 \text{ per unit} - \$12.10 \text{ per unit}$$

$$= \$5.40 \text{ per unit}$$

So, Trilex's break-even volume is as follows:

$$\text{Break-even volume (units)} = \frac{\text{Total fixed costs}}{\text{Per unit contribution margin}}$$

$$= \frac{\$390{,}000}{\$5.40 \text{ per unit}}$$

$$= 72{,}222 \text{ units}$$

To convert this number of units to break-even sales dollars, Trilex simply multiplies it by the selling price per unit:

$$\text{Break-even sales} = 72{,}222 \text{ units} \times \$17.50 \text{ per unit} = \$1{,}263{,}889$$

Trilex could compute the sales required to produce a desired profit by treating the profit as if it were a fixed cost:

$$\text{Sales (units)} = \frac{\text{Total fixed costs} + \text{Desired net income}}{\text{Per unit contribution margin}}$$

For example, if Trilex wanted to earn a $60,000 profit, its required sales would be

$$\text{Sales (units)} = \frac{390{,}000 + 60{,}000 = 83{,}333 \text{ units}}{5.40}$$

which would require 83,333 units × $17.50 per unit = $1,458,328 in sales.

Constructing a Break-Even Chart

The following steps outline the procedure for constructing a graph that visually portrays a company's break-even point (that point where revenues equal expenses):

Step 1. ***On the horizontal axis, mark a scale measuring sales volume in dollars (or in units sold or some other measure of volume).*** The break-even chart for the Magic Shop shown in Figure 11.6 uses sales volume in dollars because it applies to all types of businesses, departments, and products.

Step 2. ***On the vertical axis, mark a scale measuring income and expenses in dollars.***

Step 3. Draw a fixed expense line intersecting the vertical axis at the proper dollar level parallel to the horizontal axis. The area between this line and the horizontal axis represents the company's fixed expenses. On the break-even chart for the Magic Shop shown in Figure 11.6, the fixed expense line is drawn horizontally beginning at $177,375 (point A). Because this line is parallel to the horizontal axis, it indicates that fixed expenses remain constant at all levels of activity.

Step 4. ***Draw a total expense line that slopes upward beginning at the point where the fixed cost line intersects the vertical axis.*** The precise location of the total expense line is determined by plotting the total cost incurred at a particular sales volume. The total cost for a given sales level is found by using the following formula:

Total expenses = Fixed expenses + Variable expenses expressed as a % of sales × Sales level

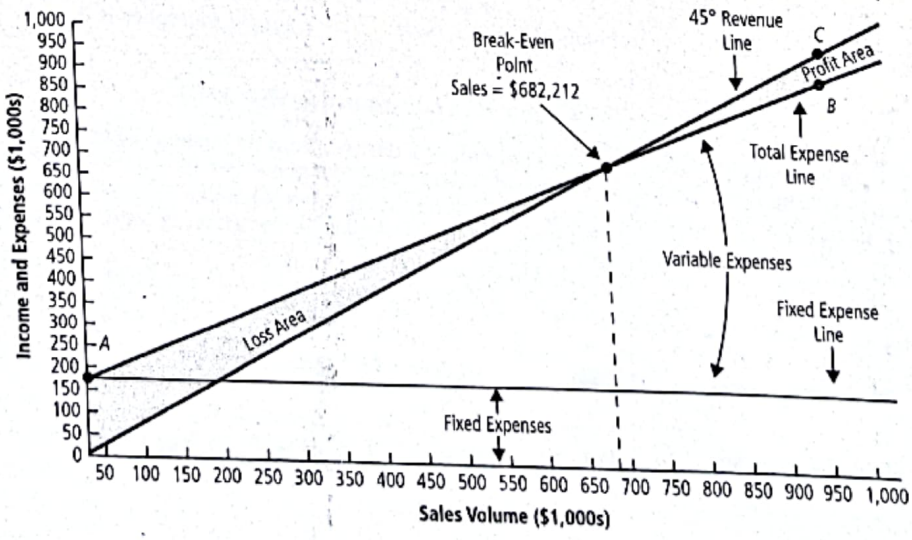
Arbitrarily choosing a sales level of $950,000, the Magic Shop's total costs would be as follows:

$$\text{Total expenses} = \$177{,}375 + (0.74 \times \$950{,}000)$$
$$= \$880{,}375$$

Thus, the Magic Shop's total cost is $880,375 at a net sales level of $950,000 (point B). The variable cost line is drawn by connecting points A and B. The area between the total cost line and the horizontal axis measures the total costs the Magic Shop incurs at various levels of sales. For example, if the Magic Shop's sales are $850,000, its total costs will be $806,375.

Step 5. Beginning at the graph's origin, draw a 45-degree revenue line showing where total sales volume equals total income. For the Magic Shop, point C shows that sales = income = $950,000.

FIGURE 11.6
Break-Even Chart for the Magic Shop



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Where Do We Break Even?

Anita Dawson is doing some financial planning for her small gift store. According to her budget for the upcoming year, Anita is expecting sales of $495,000. She estimates the cost of goods sold will be $337,000 and other variable expenses will total $42,750. Using the previous year as a guide, Anita anticipates fixed expenses of $78,100.

Anita recalls a meeting she had recently with her accountant, who mentioned that her store already had passed its break-even point eight and a half months into the year. She was pleased but really didn't know how the accountant had come up with that calculation. Now Anita is considering expanding her store into a vacant building next door to her existing location and taking on three new product lines. The company's cost structure would change, adding another $66,000 to fixed costs and $22,400 to variable expenses. Anita believes the expansion could generate additional sales of $102,000 in the first year.

She wonders what she should do.

1. Calculate Anita's break-even point without the expansion plans. Draw a break-even chart.
2. Compute the break-even point assuming that Anita decides to expand her business.
3. Do you recommend that Anita expand her business? Explain.

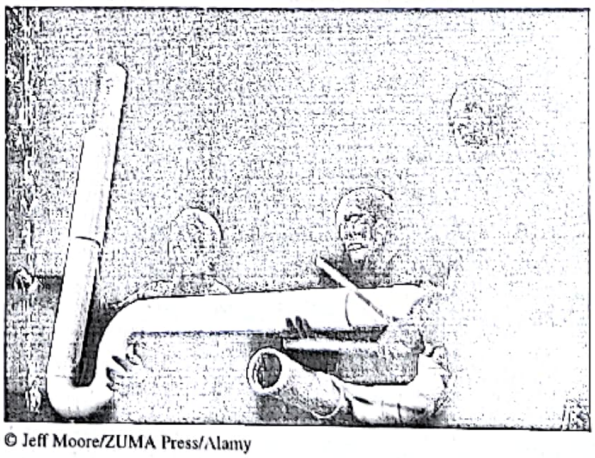
Step 6. ***Locate the break-even point by finding the intersection of the total expense line and the revenue line.*** If the Magic Shop operates at a sales volume to the left of the break-even point, it will incur a loss because the expense line is higher than the revenue line over this range. This is shown by the triangular section labeled "Loss Area." On the other hand, if the firm operates at a sales volume to the right of the break-even point, it will earn a profit because the revenue line lies above the expense line over this range. This is shown by the triangular section labeled "Profit Area."

Using Break-Even Analysis

Break-even analysis is a useful planning tool for the potential small business owner, especially when approaching potential lenders and investors for funds. It provides an opportunity for integrated analysis of sales volume, expenses, income, and other relevant factors. Break-even analysis is a simple, preliminary screening device for an entrepreneur faced with the business start-up decision. It is easy to understand and use. With just a few calculations, an entrepreneur can determine the effects of various financial strategies on the business operation. It is a helpful tool for evaluating the impact of changes in investments and expenditures. Greg Smith, for instance, knows that Petra Group's break-even point is $23,000 per week, and he compares sales to that figure every week.[36]

Calculating the break-even point for a start-up business is important because it tells an entrepreneur the minimum volume of sales required to stay in business in the long run.

ENTREPRENEURIAL PROFILE: Albert Poland: Blue Man
Albert Poland, a Broadway producer and general manager of the Astor Place Theater, an off-Broadway theater in New York City that has been the home of the famous Blue Man Group for many years, knows that the show must generate ticket sales of $40,000 per week to break even. In addition to performers' salaries, the show's costs include weekly rent, a service package fee that covers the salaries of the house and box office staff, and a percentage of the gross weekly box office receipts. The show's break-even point represents sales of about 450 seats per week. The theater's capacity is 300 seats per performance, which means that the show reaches its break-even point by selling out 1.5 of its 9 performances each week. Most of the Blue Man Group performances at the Astor Place Theater are sold out, making it a highly profitable business.[37] ■



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Break-even analysis does have certain limitations. It is too simple to use as a final screening device because it ignores the importance of cash flows. In addition, the accuracy of the analysis depends on the accuracy of the revenue and expense estimates. Finally, the assumptions pertaining to break-even analysis may not be realistic for some businesses. Break-even calculations assume the following: fixed expenses remain constant for all levels of sales volume, variable expenses change in direct proportion to changes in sales volume, and changes in sales volume have no effect on unit sales price. Relaxing these assumptions does not render this tool useless, however. For example, the owner could employ nonlinear break-even analysis to determine a company's break-even point.

Chapter Summary by Learning Objective

1. Describe how to prepare the basic financial statements and use them to manage a small business.

- Entrepreneurs rely on three basic financial statements to understand the financial conditions of their companies:
  1. *The balance sheet*—Built on the accounting equation: Assets = Liabilities = Owner's equity, it provides an estimate of the company's value on a particular date.
  2. *The income statement*—This statement compares the firm's revenues to its expenses to determine its net income (or loss). It provides information about the company's bottom line.
  3. *The statement of cash flows*—This statement shows the change in the company's working capital over the accounting period by listing the sources and the uses of funds.

2. Create projected (pro forma) financial statements.

- Projected financial statements are a basic component of a sound financial plan. They help the manager plot the company's financial future by setting operating objectives and by analyzing the reasons for variations from targeted results. In addition, the small business in search of start-up funds will need these pro forma statements to present to prospective lenders and investors. They also assist in determining the amount of cash, inventory, fixtures, and other assets the business will need to begin operation.

3. Understand the basic financial statements through ratio analysis.

- The 12 key ratios described in this chapter are divided into four major categories: *liquidity ratios*, which show the small firm's ability to meet its current obligations; *leverage ratios*, which tell how much of the company's financing is provided by owners and how much by creditors; *operating ratios*, which show how effectively the firm uses its resources; and *profitability ratios*, which disclose the company's profitability.
- Many agencies and organizations regularly publish such statistics. If there is a discrepancy between the small firm's ratios and those of the typical business, the owner should investigate the reason for the difference. A below-average ratio does not necessarily mean that the business is in trouble.

4. Explain how to interpret financial ratios.

- To benefit from ratio analysis, the small company should compare its ratios to those of other companies in the same line of business and look for trends over time.
- When business owners detect deviations in their companies' ratios from industry standards, they should determine the cause of the deviations. In some cases, such deviations are the result of sound business decisions; in other instances, however, ratios that are out of the normal range for a particular type of business are indicators of what could become serious problems for a company.

5. Conduct a break-even analysis for a small company.

- Business owners should know their firm's break-even point, the level of operations at which total revenues equal total costs; it is the point at which companies neither earn a profit nor incur a loss. Although just a simple screening device, break-even analysis is a useful planning and decision-making tool.

Discussion Questions

11-1. Why is developing a financial plan so important to an entrepreneur about to launch a business?

11-2. How should a small business manager use the 12 ratios discussed in this chapter?

11-3. Outline the key points of the 12 ratios discussed in this chapter.

11-4. What signals does each of the 12 ratios give a business owner?

11-5. Describe the method for building a projected income statement and a projected balance sheet for a beginning business.

11-6. Why are pro forma financial statements important to the financial planning process?

11-7. How can break-even analysis help an entrepreneur planning to launch a business?

11-8. Financial Plan is major hurdle to an entrepreneur. Why?

Beyond the Classroom . . .

11-9. Ask the owner of a small business to provide your class with copies of his or her company's financial statements (current or past).

11-10. Using these statements, compute the 12 key ratios described in this chapter.

11-11. Compare the company's ratios with those of the typical firm in this line of business.

11-12. Interpret the ratios and make suggestions for operating improvements.

11-13. Prepare a break-even analysis for the owner.

11-14. Find a publicly held company of interest to you that provides its financial statements on the Web. You can conduct a Web search using the company's name, or you can find lists of companies at the Securities and Exchange Commission's EDGAR database or visit AnnualReports.com to download the annual report of a company that interests you.

11-15. Analyze the company's financial statements by calculating the 12 ratios covered in this chapter and compare these ratios to industry averages found in RMA's *Annual Statement Studies, Bizminer,* or one of the other financial analysis resources found in your library.

11-16. Do you spot any problem areas in the company's financials?

11-17. What are the financial strengths of the company?

11-18. What recommendations can you make to improve the company's financial position?

11-19. What do you project the company's future to be?

11-20. Explain why you would or would not recommend investing in the company.

Endnotes

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