CHAPTER 1

Concepts in Working Capital Management



After reading this chapter, you will be able to:

- Understand the concept of working capital.
- Appreciate the components used in managing working capital.
- Determine how ratio analysis is used in understanding working capital.
- Consider traditional and modern ideas of working capital management.

orking capital is the arithmetic difference between two balancesheet-aggregated accounts: current assets and current liabilities. This calculation is done in a currency, such as U.S. dollars, which is the convention we will be using in this book.

Working Capital Concepts

Both current assets and current liabilities are comprised of several ledger accounts as shown *in italics* in Exhibit 1.1. For the company presented in this balance sheet—we'll call it the Rengas Company—the amount of working capital is \$425,000, calculated as current assets (\$650,000) less current liabilities (\$225,000).

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EXHIBIT 1.1

Rengas Company Balance Sheet (As of December 31, 2010)

Assets		Liabilities and Owners' Equity		
Current assets	\$65,000,000	Current liabilities	\$22,500,000	
Cash	5,000,000	Accounts payable	15,000,000	
Short-term investments	15,000,000	Notes payable	6,000,000	
Accounts receivable	27,500,000	Accrued expenses	1,500,000	
Inventory	15,000,000			
Prepaid expenses	2,500,000	Long-term liabilities	40,000,000	
		Bonds payable	20,000,000	
Fixed assets	60,000,000	Mortgage payable	20,000,000	
Plant and equipment (at cost)	100,000,000			
Less: Depreciation	(40,000,000)	Owners' equity	62,500,000	
		Common stock (50,000 shares)	10,000,000	
		Retained earnings	52,500,000	
Total assets	\$125,000,000	Total liabilities and net worth	\$125,000,000	

Description of Working Capital Accounts

The accounts noted in italics are briefly explained below, with chapters of this book devoted to appropriate management procedures.

- *Cash accounts and short-term investments*. These account categories include cash on hand and in bank accounts, and any short-term investments that are expected to be turned into cash within one year. We'll review the management of cash in Chapters 2 and 3, and of banking relationships in Chapter 4.
- Accounts receivable. This category of current assets includes all credit sales where the customer is expected to pay by a future date specified on an invoice. Most companies have small amounts of uncollectible credit sales, and an account called "allowance for doubtful accounts" may be deducted from accounts receivable to reflect this experience. We'll examine receivables in Chapter 5.

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- *Inventory*. Most companies hold some combination of raw materials, work in process (that is, partially manufactured and assembled), and finished goods. There are various accounting practices for valuing inventory and management concepts regarding inventory, which will be discussed in Chapter 6.
- *Payables*. The accounts payable account represents the amounts owed to creditors for purchases. Payroll is the other significant component of payables. Issues regarding payables will be reviewed in Chapter 7.
- Other working capital accounts. Prepaid expenses and accrued expenses often appear on balance sheets. Prepaid expenses are assets paid in advance of expenses as incurred. For example, insurance is paid in advance of the incurrence of the expense. Accrued expenses are costs that have been incurred as of the date of a balance sheet but not paid. An example is payroll for employees whose expenses have been incurred but not yet paid.

There are numerous considerations in the optimal management of working capital. For example, what are appropriate procedures to manage cash? To reduce accounts receivable? To improve the performance of accounts payable? We will examine these and many other issues throughout this book.

Ideas Basic to Working Capital

Various concepts and conventions are used to explain and illustrate ideas on working capital management.

• The term *bank* refers to commercial banks, although other financial services companies and some vendors provide many of the services described. Vendors are noted when the relevant topic is discussed; for example, payroll services are provided by four leading firms that are noted in Chapter 7. Freight invoice

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auditing firms are also discussed in that chapter, but there are so many companies in that business that we have not attempted to list them.

- Float is critical to an understanding of working capital. The concept of *float* refers to funds in the process of collection or disbursement. While the complete elimination of float is impossible, the calculation of the amount of float is critical in considering alternative processes. For example, in Chapter 2 we will examine the bank product of *lockboxing*. In deciding on the use of this service, we need to know the potential to save collection float as compared to the current system.
- Concepts that are basic to finance but not defined as working capital are reviewed in Appendix B. These include fixed assets, long-term liabilities and owners' equity on the balance sheet, and relevant income statement accounts. In addition, we demonstrate the calculation of the *cost of capital* (also called *weighted average cost of capital* or WACC), which is used to value float. The WACC is the weighted average of a firm's cost of debt (after tax) and cost of equity (common stock and retained earnings), and is expressed as a percentage.
- Opportunity audits should be conducted by relevant functions to analyze each element of working capital. For example, in payables, managers examine the percentage of payments made by check, the cost of those transactions, the extent of cash discounts offered and taken, the results of account reconciliation, the incidence of fraud, and other issues. As an essential part of this process, it is useful to document the delays and organizational units involved in the movement of forms, files, and other records including computer systems; see *Tips and Techniques: How to Be a Working Capital Consultant*.

TIPS AND TECHNIQUES

How to Be a Working Capital Consultant

The traditional functional scheme of corporate management such as sales, manufacturing, finance, and technology—prevents any one manager from having direct responsibility for working capital. Most often the only common manager is the chief executive officer (CEO) or chief operating officer (COO), who seldom has knowledge of or interest in the specific functioning of those activities. In order to better understand and analyze working capital flows, here are the suggested steps in a process often referred to as an *opportunity audit*.

- Prepare a "payment stream matrix" listing the working capital flows by name, dollar volume, and manager. The matrix becomes a road map to understanding and improving the business by indicating those major activities that drive shortand intermediate-term successes and failures. A working capital flow is an activity of the organization that generates a cash inflow or outflow. Inflows, or collection flows, are often products or services; outflows, or disbursement flows, are accounts payable (to vendors for purchases), payroll, and other uses of cash.
- Use the matrix to bring other disciplines within your organization into your working capital review. It is usually necessary to involve managers in all of the functional areas of the business, including sales, operations, and finances. Input from customers and vendors can be helpful in understanding how a transaction occurs from their perspective, and to make the process more efficient and effective for all parties.
- Focus on the major flows—usually those that have \$1 to 2 million per month in activity—to allow you to develop improvements through the application of technology, redesign of existing processes, and consideration of outsourcing to banks

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TIPS AND TECHNIQUES (CONTINUED)

and vendors. Consider both float (valued at the cost of capital) and processing expenses to build a baseline of costs, and then consider various new approaches to find efficiencies.

• Once opportunities for improvement are identified and solutions evaluated, senior management should be consulted for permission to proceed. See *Tips and Techniques: How to Overcome Resistance to Change* for ideas on coping with internal resistance.

TIPS AND TECHNIQUES

How to Overcome Resistance to Change

Bringing change to companies is often an extremely difficult task regardless of the logic of an innovation or the demonstrable savings that will result. Here are some ideas on meeting internal resistance.

- Solicit the support of senior management. Promote the program through presentations to middle managers and educational events to explain where opportunities can be found.
- Reward employees who work outside of finance for each idea suggested and accepted, and then again when it is successfully implemented. These incentives really draw company employees into the change process and foster an environment that controls naysayers.
- Use any available marketing devices to publicize the effort, including articles in the company newspaper, announcements at company meetings, e-mails messages, and promotions through cafeteria or lunchroom events. If your company can sell a product or service, it can sell working capital efficiency!

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Ratio Analysis

The various accounts on financial statements (the balance sheet and the income statement) can be used to provide critical information about a company to financial managers, bankers, investors, and other interested parties. Ratio analysis allows us to quickly examine a company's financial statements to determine how performance has changed over time and/or how it compares with its competitors.

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How Ratios Are Constructed

Data are entered into a numerator and a denominator and then divided to allow the calculation of a relationship that is considered meaningful. We can compare these data to previous years to see if a company's financial position is improving or deteriorating; this is called *longitudinal analysis*. We can also compare a company to others in the industry in the same time frame; this is known as *cross-sectional analysis*.

Finding truly comparable companies is difficult because no two organizations are exactly alike. They may have different geographic coverage, varying product lines, significantly dissimilar economies of scale, or other distinguishing characteristics. We'll attempt to compare actual companies in their industry while noting these discrepancies later in this chapter.

There are three sets of ratios in general use: (1) liquidity, (2) activity utilization, and (3) profitability. We'll review the ratios that specifically impact working capital using Exhibit 1.1 data as supplemented by the income statement data shown in Exhibit 1.2.

Working Capital Ratios

The important working capital ratios are noted below. Examples of other ratios will be noted in later chapters. We'll call the fictional business used for this chapter's ratios and throughout this book the Rengas Company.

EXHIBIT 1.2

Rengas Company Income Statement (For the Year Ending December 31, 2010)

Sales	\$150,000,000	
Less: Cost of goods sold	(100,000,000)	
Gross profits	50,000,000	
Less: Selling and administrative expense	(20,000,000)	
Less: Depreciation expense	(5,000,000)	
Operating profit	25,000,000	
Less: Interest expense	(4,000,000)	
Earnings before taxes	21,000,000	
Less: Corporate taxes (at 35%)	(7,350,000)	
Net income after taxes	\$13,650,000	

Liquidity

Liquidity refers to a company's cash position and its ability to pay its bills as they come due. The phrase "cash position" is not limited to cash on hand and in the bank; it includes access to bank loans and short-term investments as well. Liquidity should not be confused with profitability or net worth; a company could earn accounting income with significant assets, and yet go bankrupt for lack of working capital.

The two liquidity ratios are the current ratio and the quick (or acid test) ratio.

• The *current ratio* is calculated as follows:

current assets ÷ current liabilities

From Exhibit 1.1, the result is 2.9 (\$65,000,000 ÷ \$22,500,000).

• The *quick ratio* is considered more useful because it eliminates inventory in the numerator, on the theory that this asset could be stale, worn, or not saleable except at bargain prices. The quick ratio is calculated as follows:

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(current assets - inventory) \div current liabilities
or 2.2 ([$65,000,000 - $15,000,000] \div $22,500,000).
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There are no standard ratios that solely measure cash (as a current asset) or cash flow (cash receipts – cash disbursements). However, *Troy's Almanac* (cited in the section "How Ratios Are Used") calculates total receipts (revenues from all sources) to cash flow, and cost of goods sold to cash flow. We will discuss this further in Chapter 10.

Activity Utilization

The *activity utilization* ratios indicate how efficiently the business is using its assets. The important working capital utilization ratios are receivables turnover (and its complement, average collection period) and inventory turnover (and its complement, inventory turnover days).

• *Receivables turnover* is calculated as follows:

credit sales \div accounts receivable¹

For simplicity in this discussion, we'll assume that there are no cash sales, with the receivables turnover determined as $150,000,000 \div 27,500,000$, or 5.5 times.

• Average collection period is calculated as follows:

receivables ÷ daily credit sales

In this example, we'd divide \$27,500,000 by ($150,000,000 \div$ 360), with the result of 66 days.

• *Inventory turnover* is calculated as follows:

cost of goods sold ÷ inventory

or \$100,000,000 ÷ \$15,000,000, which is 6.7 times.

^{1.} Only credit sales are used because any cash sales would be collected immediately; therefore no receivable would be created. The term *receivables* refers to accounts receivable.

- *Inventory turnover days* are calculated as follows:
 - $360 \text{ days} \div \text{inventory turnover}$

In this example, we'd divide $360 \div 6.7$, which is 54 days.

Profitability

Although *profitability* is not an explicit component of working capital, it is included here because any change to working capital components directly impacts profits. In fact, if profit ratios have deteriorated or are below those of competitors, this may indicate working capital improvement opportunities. Important profitability ratios are profits to sales (ROS) and return on equity (ROE). The term "return" is another word for profits, and these ratios calculate the after-tax returns.

• *Profits to sales* (sometimes called "return on sales" or ROS) is calculated as follows:

profits after taxes \div sales or \$13,650,000 \div \$150,000,000, or 9.1 percent

• *Return on equity* (ROE) is calculated as follows:

profits after taxes ÷ owners' equity or \$13,650,000 ÷ \$62,500,000, or 21.8 percent

• There are a few industries where the ROE is considered of secondary importance to the ratio that measures the return on assets (ROA). For example, this ratio is widely used in banking to determine the profitability of a bank based on its asset base. The calculation of *return on assets* is as follows:

> profits after taxes \div total assets or $13,650,000 \div 125,000,000$, or 10.9 percent

Leverage ratios are discussed separately as there are no direct working capital issues; see *In the Real World: The Other Category of Ratios: Leverage.* However, leverage indirectly affects working capital because of the impact on required cash payments for interest or the expected cash payments for dividends.

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IN THE REAL WORLD

The Other Category of Ratios: Leverage

There is a fourth important category of ratios—financial leverage—that measures the extent to which a company uses debt as a source of its capital. The *financial leverage* ratio is calculated as follows:

total debt ÷ total assets

Another important leverage ratio, *times interest earned*, measures the number of times that income covers the obligation of paying interest on debt. This ratio is calculated as follows:

income before fixed charges (including lease payments and interest) and taxes ÷ the total of fixed charges

We do not include these ratios in a working capital discussion because the components do not appear in the current portion of the balance sheet.

How Ratios Are Used

We cannot use these ratios without reference to either earlier results, say from 2008 and 2009, or to those from competitive companies. The issue of finding reasonable "comparables" is made possible through industry ratios published by such sources as *RMA Annual Statement Studies* (published by the Risk Management Association); and Leo Troy, *Almanac of Business and Industrial Financial Ratios* (published by CCH [Commerce Clearing House]).² Selected ratios are also at *Value Line* (published by Value Line Inc.); Standard and Poor's Industry Surveys (www.standardandpoors.com/products-services/netadvantage); Dun

^{2.} These three sources are available in the business reference sections of many libraries. See Appendix B for a listing of useful references and web sites. Troy can also be located at www.books.google.com/books?id=5nEsDHfsfFworking capital&dq=leo+troy%2Bcash+flow&source=gbs_navlinks_s.

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& Bradstreet (www.dnb.com); and financial web sites like www .hoovers.com.

The main difficulty in using these sources is that each business has its own marketing processes, market coverage, and product lines, and when aggregated into an industry, company uniqueness loses meaning. That problem aside, we can compare the calculated current ratio of 2.9:1 (read as "2.9 to 1") to the industry's result. The general rule when using industry comparisons is that any result within the interquartile range is considered normal, and that any result outside of that range is unusual and worthy of further analysis.³

In our situation, 2.9:1 can be too low compared to the industry, which is unlikely, or too high, which is quite possible. In other words, there may be an efficiency problem when ratios are too high, usually indicating that too much of a numerator (such as an asset or a group of assets) are being used to support a denominator (such as a liability or a group of liabilities). It may be a more serious problem when there is too little of a numerator supporting a denominator, as this could indicate a possible future liquidity, activity utilization, or profitability crisis.

Significance of Working Capital

Why is working capital management important? In truth, businesses have not paid sufficient attention to working capital in previous years, and have focused instead on such concerns as raising and using debt and equity capital, choosing information and manufacturing technology to run operations, and attempting to develop domestic and global marketing strategies to sell product. However, recent economic problems have forced companies to consider ways to improve profitability, cut costs, and make business processes efficient. These are not just necessary actions—they are required for survival!

^{3.} The *interquartile range* refers to the area in an array of results from the twenty-fifth to the seventy-fifth percentiles (or the first to the third quartiles). An *array* is a listing of the members of a group in either ascending or descending order. The middle item in an array is the *median* (the fiftieth percentile), while the *mean* is the arithmetic average of the total of all items divided by the number of items.

Working Capital: Traditional View

Working capital traditionally has been considered as a positive component of the balance sheet. That is, good performance for the current ratio has been considered as a result well in excess of 1:1, with the higher the numerator, the better; similar results hold for the other working capital ratios. For example, \$3 million of current assets compared to \$1 million of current liabilities is a current ratio of 3:1, or a three times "cover."

This thinking has been driven by the attitude of lenders and financial analysts that working capital constitutes a store of value for repaying such debts as borrowings. Bankers are trained to look at financial ratios and demand numbers that exceed preset standards. Often this demand is to enable the bank to force a company to borrow to put more cash on the balance sheet, thereby growing the bank's loan portfolio.

Working Capital: Modern View

The newer view is that working capital is undesirable because it constitutes a drag on financial performance. Current assets that do not contribute to ROE hinder the performance of the company, and hide obsolete inventory that may not be saleable, receivables that may not be collectible, and other problems. The emphasis is now on reducing current asset accounts to the point that current liabilities can be funded from the ongoing operations of the business. That is, cash collected from sales is used to pay for payables and payroll, with the minimum in idle current asset accounts.

The concept of working capital as a hindrance to financial performance is a complete change in attitude from earlier conventional wisdom. However, working capital has never actually contributed to a company's profits or losses; instead, it sits on the balance sheet awaiting disposition. No profits are directly generated by cash or accounts receivable, and inventories provide returns only when sold at prices above 14

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cost. In fact, there is a significant cost in carrying working capital, which can be calculated using the cost of capital; see Appendix B.

If the financial manager attempts to drive working capital down to nearly zero, he or she must actively manage each asset and liability category. Today, the discipline of working capital management is a growing field of practice that involves financial managers, marketing managers, accounts receivable and payable managers, order-entry and invoicing supervisors, and other staff. See *In the Real World: Dell's Management of Working Capital* for a discussion of one company's approach to working capital.

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Dell's Management of Working Capital

The twenty-first-century approach to working capital management has been effectively implemented by Dell Computer and several other companies. Dell accepts ownership of components shortly before the start of manufacturing, driving raw materials inventory to minimal levels. Products are sold and a collection transaction is concurrently initiated, using credit cards or payments through electronic mechanisms, eliminating most accounts receivable. Dell manages the operating working capital or *cash conversion cycle* (CCC) to attain a zero net time for days of sales inventory minus days of payables outstanding.

The CCC is defined as the number of days between disbursing cash and collecting cash in connection with undertaking a discrete unit of operations.

= Inventory Conversion Period	+ Receivables Conversion - Period	Payables Conversion Period
Average Inventory	Average Accounts Receivable	Average Accounts Payable
Cost of Goods Sold/365	Revenue/365	Cost of Goods Sold/365

Dell has actually attained a quarterly cash conversion cycle of *minus* eight days!

Managing working capital to nearly eliminate current assets and liabilities requires that cash not be expended to prepay for inventory or other operating costs, that vendors hold title to goods until delivery is requested, and that redundant expenses be eliminated where possible. A considerable inventory position is warehoused by cooperating vendors within minutes of delivery to a Dell factory, and is requisitioned once a customer sale is booked. Since some suppliers are reluctant to do business with these requirements, Dell buys from fewer than fifty companies, down by 75 percent from a decade earlier. Another innovation is the direct shipment of video displays to customers by the vendor based on an e-commerce instruction from Dell. This saves the cost of a second shipment, worth \$30 per display.

As the result of these various actions, Dell's inventory turnover (for the year ending in January 2009) was an astonishing 57.8 times versus a median 6.3 times for the computer manufacturing industry, and its receivables turnover is 9.5 versus a median 8.0 for the industry. How does working capital affect Dell's financial statements? In the most recent reporting period, Dell's ROE was 58.0 percent, while the industry was earning 16.1 percent. And over the five-year period prior to the credit crisis that began in 2008, the ROE of Dell was 63.1 percent versus the industry's 32.2 percent.

Applying These Ideas to a Real Business

Thus far we've been considering a fictional company's financials. Now we'll look at the working capital results for Best Buy (stock ticker symbol BBY), a leading consumer electronics retailer operating over a thousand stores primarily in the United States. Best Buy's business strategy centers on meeting individual consumer electronics needs with end-to-end solutions, which involves greater employee involvement and increased services.

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What Is Best Buy's Industry?

We noted earlier the problem in defining the industry from which to develop ratios for purposes of comparing equivalent companies, those in similar lines of business. Most observers would agree that Best Buy had a direct (although smaller and far less successful) competitor in Circuit City, but that company ceased operations in 2008. Others competing with Best Buy include Game Stop and Radio Shack. When searching for an industry, we could use "radio, television, and other electronics stores" from *RMA Annual Statement Studies*, but there are certainly other industry classifications that might be acceptable.

Whatever the industry, these retailers are experiencing severe price competition from discounters like Wal-Mart, direct mail sellers like Amazon, and warehouse stores like Costco. There have been various responses to this development, including the closing of marginal operations and the layoff of employees, more aggressive management of operations through leaner inventory and other actions, and the expansion into more profitable foreign markets like Asia (particularly China) and Canada. As an example of this last trend, Best Buy now does about onefifth of its business in other countries.

Working Capital at Best Buy

The achievements of Best Buy can be traced to the retailing "category killer" concept,⁴ which involves megastores with the size and general appearance of warehouses. These operations have an enormous assortment of merchandise, low prices, and self-service that is supported by staff trained in specific electronics product lines. Successful retailers have been able to seize market share from smaller operators who do not have

^{4.} Examples of category-killer retailers include Wal-Mart (discounting); Home Depot and Lowe's Companies (building supplies); Bed, Bath and Beyond (home furnishings); Staples and Office Depot (office supplies); AutoZone (auto parts); and TJX Companies, the Gap, and Limited Brands (apparel). Although the category killer is not generally applied to companies that are in other industries, a few equivalent examples might include Apple (computer hardware); Goldman Sachs, T. Rowe Price, and PNC Financial (financial services); Coca-Cola, Colgate-Palmolive, and PepsiCo (consumer nondurables); and Celgene, Gilead Sciences, and Teva Pharmaceuticals (biotechnology).

the buying power to negotiate vendor discounts on inventory or the cash reserves to advertise aggressively or train staff. The consumer knows that prices are consistently low, so there is little reason to wait for special sales or to comparison shop.

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Companies operating category killers have discovered that a key to this retail model is inventory, ordering process, transportation, and warehousing. The process is highly automated in modern distribution centers through the use of bar-coding equipment to scan and direct merchandise to holding bins or directly for delivery to stores. As inventory is sold, computerized information notifies distribution to begin replenishment and marketing to match sales to projections. We see this in the ratios in Exhibit 1.3, with inventory turnover at 7.2 turns versus the industry median of 6.6.

The other working capital ratios indicate similarly superior performance compared to the industry median. Furthermore, Best Buy managers understand that the capture of a market is a strategic process and cannot be accomplished in one quarter (the interval when public company earnings are reported). The compound growth rate for Best

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Best Buy and Industry Working Capital Ratios						
		Industry				
	Best Buy (BBY)	First Quartile	Median	Third Quartile		
Current ratio (to 1)	1.0	1.1	1.3	1.9		
Quick ratio (to 1)	0.4	0.2	0.6	1.2		
Receivables turnover (turns per year)	22.9	8.5	19.6	40.0		
Inventory turnover (turns per year)	7.2	4.0	6.6	11.7		
Return-on-equity (%)	22.0	4.4	17.4	30.4		

Source: RMA, *Annual Statement Studies* (2008–2009), and BBY Corporate Reports (2009).

Buy over the past 10 years prior to the current economic crisis was 16.5 percent, while competitors experienced flat or negative growth.

In terms of operating revenues, Best Buy now has three-fourths of the volume reported by the industry,⁵ versus just over one-third 10 years earlier. It is likely that the current recession will continue to weaken competitors, perhaps forcing them to terminate operations (such as Circuit City) or close stores, while Best Buy has substantial liquidity and can withstand slower consumer traffic. By 2012, Best Buy could easily have 80 to 85 percent of the industry's volume.

Summary

Working capital involves two balance-sheet-aggregated accounts: current assets and current liabilities. The performance of these accounts is measured using ratios to examine a company's financial statements, allowing the determination of how performance has changed over time and/or against competitors. The ratios in general use calculate (1) liquidity, (2) activity utilization, and (3) profitability as compared to such standard sources as *RMA Annual Statement Studies* and *Troy's Almanac*.

Working capital was traditionally viewed as a positive component in managing a business; the modern view is that it constitutes a drag on financial performance. Current assets that do not contribute to return on equity hinder the performance of the company, and may hide obsolete inventory that may not be saleable and receivables that may not be collectible. The focus is now on reducing working capital accounts to the point that current obligations can be funded from the ongoing operations of a business.

^{5.} Using the definition of the industry used by Standard & Poor's in its *Industry Surveys: Specialty Retailing—Computers and Electronics*. Within all of specialty retailing, only Home Depot (at \$71.3 billion) and Staples (at \$23.1 billion) are of roughly similar size to Best Buy (at \$45.0 billion).