CHAPTER TWO

Working Capital Ratios and Other Metrics

This chapter covers these topics:

- Determination of how ratio analysis is used in understanding working capital.
- Appreciation of the calculation of the liquidity, activity, and profitability utilization ratios.
- Understanding of such other metrics as the statement of cash flows and the cash conversion cycle.
- Consideration of the advantages and disadvantages of benchmarking of working capital.
- Clarification of the general issues in using ratios and other metrics in managing working capital.

RATIO ANALYSIS AND OTHER METRICS are used to provide a comparative basis for a company against its industry and its experience in previous years. We use plastics manufacturing as the industry comparison, although the reader should understand that each industry is

unique. For example, companies that manufacture men's clothing experience a very long receivable cycle, often six months, while grocery stores and supermarkets are expected to pay their suppliers for certain food products in about one week.

We note certain metrics that present difficulties in finding appropriate industry comparisons. Toward the end of this chapter we will review some of the problems in using metrics to establish performance effectiveness.

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 against its competitors.

How Ratios Are Constructed

To calculate a ratio, data are entered into a numerator and into a denominator, and then divided to allow the analysis of a relationship that is considered meaningful. We can compare these data to past 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 timeframe; 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, and other distinguishing characteristics. In Chapter 1 we compared an actual company—Best Buy—to its industry while noting some of these discrepancies.

There are four sets of ratios in general use: liquidity, activity utilization, profitability, and financial leverage. 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 2.1. While we could calculate longitudinal ratios as we have two years of data, the ratio calculations will be for the most recent year, 2013. In the discussion that follows, it should be understood that these are the generally accepted "significant ratios" that have been applied to the analysis of companies for nearly 100 years.

EXHIBIT 2.1 Rengas Company Income Statement (for the years ended December 31, 2012, and 2013)

	2012	2013
Sales	$125,000,000	$150,000,000
Less: Cost of goods sold	85,000,000	100,000,000
Gross profits	40,000,000	50,000,000
Less: Selling and administrative expense	15,000,000	20,000,000
Less: Depreciation expense	3,000,000	5,000,000
Operating profit	22,000,000	25,000,000
Less: Interest expense	4,000,000	4,000,000
Earnings before taxes	18,000,000	21,000,000
Less: Corporate taxes (at 35%)	6,300,000	7,350,000
Net income after taxes	$11,700,000	$13,650,000
Dividends paid	$ 6,000,000	$ 7,400,000

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. 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.

1. The **current ratio** is calculated as follows: Current assets ÷ Current liabilities. From Exhibit 1.1, the result is 2.9 ($65 million ÷ $22.5 million). This calculation supposedly provides an indication that a company has sufficient liquidity to make payments to employees, vendors, and other parties.
2. 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 salable except at bargain (perhaps below cost) prices. The quick ratio is calculated as follows: (Current assets – Inventory) ÷ Current liabilities, or 2.2 ([$65 million – $15 million] ÷ $22.5 million).

There are no significant ratios that solely measure the current assets of cash (or cash flow) or use working capital in a calculation. However, we will suggest useful cash and cash flow ratios later in this chapter, with more extensive commentary in Chapter 11.

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 ÷ Accounts receivable.[1] For simplicity in this discussion, we'll assume that there are no cash sales, with the receivables turnover determined as $150,000,000 ÷ $27,500,000, or 5.5 times.
- **Average collection period** (ACP) is calculated as follows: 360 days ÷ receivables turnover. In this example, we'd divide 360 days by 5.5 times, with the result of 65 days. The usefulness of the calculation of ACP is that the manager can quickly determine if the established credit period is being ignored. For example, if the terms to customers are net 30 (meaning payment is due 30 days after the receipt of an invoice), and the ACP is 65 days, many customers are disregarding the company's expectation for prompt payment. See Chapter 6 for a complete discussion of this issue.
- **Inventory turnover** is calculated as follows: Cost of goods sold ÷ Inventory, or $100,000,000 ÷ $15,000,000, which is 6.7 times.
- **Inventory turnover days** are calculated as follows: 360 days ÷ Inventory turnover. In this example, we'd divide 360 by 6.7, which is 54 days. As with ACP, the value is in understanding the number of days of inventory held by the company. While 54 days appears long, the ratio must be used in comparison with earlier years or the industry's results to be meaningful.

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 problems and opportunities. Important profitability ratios are profits-to-sales and return-on-equity (ROE) ratios. The term *return* is another word for profits, and these ratios calculate the after-tax returns.

- **Net profits to sales** (sometimes called "profit margin" or ROS) is calculated as follows: Profits after taxes ÷ Sales, or $13,650,000 ÷ $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. The ROE is a unique metric as it can be used in comparison with all other possible investments. While 21.8 percent is a healthy result, a manager who realizes a significantly lesser amount, perhaps 12 percent or so, should be considering other uses for the investment in a business.
- 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 (ROA) is as follows: Profits after taxes ÷ Total assets, or $13,650,000 ÷ $125,000,000, or 10.9 percent. (In a typical American bank, the ROA is about 1 percent.)

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 primary **financial leverage** ratio is calculated as follows: Total debt ÷ Total assets. An alternative leverage ratio is Total debt ÷ Total equity, which is how certain sources of ratios report this result.

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: Operating income before interest and taxes (EBIT) ÷ Interest expense.

These ratios are not considered as relevant in measuring working capital because the components do not appear in the current portion of the balance sheet. However, any change in working capital affects the "free" debt portion of current liabilities—that is, such accounts as payables or accruals, which do not carry an explicit interest charge, as well as the requirement for financing the business and the resulting interest and equity cost.

OTHER RATIOS AND THEIR APPLICATION

The term *significant ratios* exists largely because of historical usage, rather than because there has been a thoughtful analysis of the current usefulness of specific ratios. For example, cash is often considered the lifeblood of a business, and yet we noted that no significant ratio measures cash or other forms of liquidity such as bank lines of credit (to be discussed in Chapter 4).

Troy and RMA

The following ratios from Troy and RMA may be useful in determining the working capital of a company in comparison with its industry.[2] These ratios are in addition to the significant ratios that have been discussed.

- Troy
  - Net sales to working capital
  - Current assets to working capital
  - Current liabilities to working capital
  - Working capital to net sales
  - Inventory to working capital
  - Total receipts to cash flow
  - Cost of goods (sold) to cash flow
  - Cash flow to total debt

The term *total receipts* primarily refers to revenues, but also includes cash inflows from interest income, rental receipts, royalties, net capital gains, and dividends. *Cash flow* is calculated as cash receipts less cash disbursements.

- RMA ratios
  - Cost of sales (cost of goods sold) to (accounts) payable
  - (Net) sales to working capital

The definitions of several of these Troy ratios probably do not require explanation, although the logic should be noted. The working capital measures (Troy and RMA) are forms of activity utilization, with a low ratio indicating a less efficient use of the current portion of balance sheet accounts. The cash flow ratios are a form of the liquidity ratios. The total receipts-to-cash-flow ratio is particularly useful in measuring liquidity, and we will return to a discussion of its application in Chapter 11.

How Ratios Are Used

We can compare a calculated current ratio of 2.9:1 (read as "2.9 to 1") to the industry's statistic or the result from previous years. 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.

- The **interquartile range** refers to the area in an array of results from the 25th to the 75th 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 50th percentile), while the **mean** is the arithmetic average of the total of all items divided by the number of items.

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) is 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 problem.

Exhibit 2.2 compares Rengas with the median result for plastic manufacturers. We could also list the interquartile results for the industry. The company is conservatively managed based on its higher liquidity ratios and times interest earned. Although Rengas is certainly profitable compared to its peers, there could be improvements in receivables collection. This is a valuable "snapshot" of a company's performance as long as the comparison is with equivalent companies.

OTHER METRICS

There are numerous other metrics that can be used to measure the performance of a company's working capital management. Arguably the most important of these is the statement of cash flows, which is a mandatory document for publicly traded companies.[3] The statement uses balance sheet accounts and income that affects cash and cash equivalents, and analyzes operating, investing, and financing activities.

EXHIBIT 2.2 Rengas Company and Plastic Manufacturing Industry Ratios

	Rengas	Industry
Current ratio	2.9	1.6
Quick ratio	3.3	0.9
Debt ratio	50.0%	50.0%
Times interest earned	6.3	3.6
Receivables turnover	5.5	7.3
Average collection period days	66.0	49.3
Inventory turnover	6.7	7.1
Days in inventory	54.8	50.7
Return-on-equity	21.8%	10.9%
Return-on-sales	9.0%	3.0%

Source: RMA, Annual Statement Studies, Industry NAICS 326122, for companies with greater than $25 million in sales

The first section calculates operating cash by restating accrual income as adjusted for changes in the financial statements during the year. A source of funds is any increase in cash, while a use of funds is any decrease in cash. Strategic decisions in a company involve capital investing, permanent financing, and the calculation of the net cash position.

The obvious concern of working capital management is the operating cash section. Although a negative net operating cash position in a particular year can be offset by financing or investing decisions, a continuing cash loss from ongoing operations cannot be indefinitely continued. For the Rengas Company's Statement of Cash Flows, see Exhibit 2.3.

Rengas has a healthy amount of working capital from operations, which has been used for capital investing and the payment of dividends. The statement of cash flows is particularly helpful to bankers and investors who need to know that the company is producing sufficient cash to conduct longer-term strategies without compromising its position. This financial metric can be compared to results in previous periods to determine whether improvement or deterioration has occurred.

Cash Conversion Cycle

The **cash conversion cycle** (CCC) is defined as the number of days between disbursing cash and collecting cash in connection with undertaking a discrete unit of operations. The calculation is in Exhibit 2.4.

EXHIBIT 2.3 The Rengas Company Statement of Cash Flows ($ millions)

Part A: Cash Flow from Operations		
Net sales	$150.0	Source
Chg. in accounts receivable	–2.0	Use
Cash receipts from sales	148.0	Net
Cost of goods sold	–100.0	Use
Chg. in inventory	-3.0	Use
Chg. in accounts payable	3.5	Source
Cash purchases	–99.5	Net
Cash margin	48.5	Aggregated Net
Total selling, gen. and admin. expenses	–20.0	Use
Depreciation expense	5.0	Source
Chg. in prepaid expenses	0.5	Source
Chg. in accrued expenses	0.5	Source
Cash operating expenses	–14.0	Net
Cash operating profit	34.5	Aggregated Net
Interest expense	–4.0	Use
Income taxes	–7.3	Use
Cash flow from operations	$ 23.2	Net
Part B: Cash Used for Capital Investing		
Net fixed assets 2013	$ 60.0	Net Use
Less: Net fixed assets 2012	–50.0	
Cash used for capital investments	–$ 10.0	Aggregated Net
Part C: Payments for Financing		
Chg. in notes payable	$ 2.0	Source
Chg. in bonds payable	0	No Change
Chg. in mortgage payable	3.5	Source
Cash paid for dividends	7.4	Use
Payments for financing	–$12.9	Aggregated Net
Part D: Summary and Reconciliation vs. Balance Sheet Cash		
Cash flow from operations	$ 23.2	
Cash used for capital investing	–10.0	
Payments for financing	–12.9	
Net cash and short-term investments	$ 0.3	
Reconciliation: Chg. in cash and short-term investments from balance sheet (2013 vs. 2012)	$ 0.3	

Chg. = Change.

EXHIBIT 2.4 Cash Conversion Cycle

=	Inventory conversion period	+	Receivables conversion period	−	Payables conversion period
=	Average inventory / Cost of goods sold/365	+	Average accounts receivable / Revenue/365	−	Average accounts payable / Cost of goods sold/365

Dell Computer and several other companies have effectively implemented the modern approach to working capital management discussed in Chapter 1.

Dell Computer's CCC

Dell has actually attained a quarterly cash conversion cycle of *minus* eight days! Dell accepts ownership of components shortly before the start of manufacturing, driving raw materials inventory to minimal levels. Products for consumers are sold and a collection transaction is concurrently initiated, using credit card or payment through electronic mechanisms, eliminating most accounts receivable.

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 50 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 and 32.4 times in 2013, 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.

BENCHMARKING

Benchmarking compares the processes of a business and selected performance metrics to industry best practices or those from other industries. The theory of benchmarking is that the "best" companies in an industry have processes that are worth studying and perhaps replicating in the effort to stay competitive, increase market share, and improve profitability.

Methodology

The following is an example of a typical benchmarking effort:

- **Selection of problem(s) to study.** Benchmarking can be applied to any business process or function, and so a range of research techniques may be required. They include informal conversations with customers, employees, or suppliers; exploratory research techniques such as focus groups, in-depth marketing research, quantitative research, surveys, questionnaires, reengineering analysis, process mapping, quality control variance reports, or financial ratio analysis; or the review of cycle times or other performance indicators.
- **Identification of other companies and industries that have similar processes.** It is essential to use comparable companies and industries to establish reasonable standards. It is only valid to compare performance against similar size organizations in analogous lines of business and at equivalent stages of technological innovation, research and development, and maturity of channels of distribution.
- **Determination of organizations that are considered industry leaders.** Consult customers, bankers, suppliers, financial analysts, trade associations, and industry publications to determine which companies are worthy of study.
- **Surveying and visitation of companies for metrics and practices.** Companies target specific business processes using detailed surveys of metrics and practices used to identify alternative practices.
- **Implementation of improved business practices.** Using the superior business practices, develop implementation plans, which include identification of specific opportunities, funding of the project, and marketing the ideas to the organization for the purpose of gaining demonstrated value from the process.

Working Capital Benchmarking

Much of the effort in benchmarking of working capital processes has been through advisory firms and association sponsorship, rather than through publicly available sources; leading firms include the following:

- AnalyticResults
- Hackett Group
- Citibank Treasury Diagnostics
- Deutsche Bank (Treasury Pulse)
- CEB

Organizations sponsoring benchmarking studies include the Association for Financial Professionals, the Benchmarking Network, and the Knowledge Management Benchmarking Association. These sources have provided data for comparison and improvement for several years, and are now adding connections to mainframe ERP systems [4] (such as Oracle and SAP) to extract information on costs, cycle times, error rates, and cash conversion cycles.

Working capital benchmarking applications usually focus on metrics that provide logical comparisons and opportunities for cost savings. These include:

- **Full-time-equivalent (FTE) staff levels:** measured as FTEs per dollar of sales
- **Cost:** measured as cost per dollar of sales
- **Throughput:** measured as units processed per FTE for standard activities (such as payment transactions)
- **Cycle times:** measured as days required to complete such activities as reconciling bank account discrepancies, developing cash budgets, and calculating the correct timing and amount of inventory to order (the EOQ position; see Chapter 7)
- **Policies and procedures:** measured as the existence of policies and procedures

A typical focus is efficiency and cost savings, as shown in the purported savings opportunities in Exhibit 2.5.

Benchmarking Concerns

The cynical Jaques states in *As You Like It* (Act II, Scene 7, William Shakespeare), that "I met a fool i' the forest, A motley fool." Benchmarking is one of the current popular management buzzwords. Some of these fads have relevance to an improved business organization, and some of the concepts are clearly flawed.[5]

EXHIBIT 2.5 Savings from Benchmarking (per transaction)

Process	Measure	Cost Average Company	Cost "Best" Company
Payables	Invoice	$3.55	$0.35
Receivables	Remittance	$0.67	$0.04
Fixed Assets	Asset Tracked	$4.55	$0.64

Source: The Hackett Group

Business managers do not operate on an assembly line, standardized product world. Based on experience with hundreds of companies, it is the author's conclusion that there are significant variations in activities by industry, organizational structure, business role within the organization, extent of technological maturity, and participation in global markets. In fact, about the only standard activities are those that involve purchased services from banks and vendors through a process of competitive bidding.

Companies that count the number of transactions completed or the equivalent cost, rather than emphasizing the content of those transactions, are forcing employees to focus on quantity rather than quality. In our work we have observed companies where the process has turned into a team competition, where the winning group receives recognition at the end of the month. In those situations, the result is speed, but at the sacrifice of the work product.

This is a form of microanalysis, which involves the examination of a very specific element that exists within the larger context of the cash flow timeline. The essence of the timeline concept is an entire process, not a single step or action within that process. If the focus is on specific elements rather than the process, managers may find that not all alternative approaches are identified, that timeline element interactions are not considered, and that not all elements within each alternative are examined.

GENERAL PROBLEMS IN THE USE OF RATIOS AND METRICS

The main difficulty in using financial statement data from an aggregated source like Troy or RMA is that each business has its own unique characteristics, and when aggregated into an industry, data lose meaning. There are certain

commonalities in such data, such as vendors and labor costs (in accounts payable), prices paid for materials (in inventory), cash and liquidity sources, and perhaps others. Specific accounting problems in the data are noted next.

Fiscal Year

Balance sheets are published on an "as of" date, and do not represent a year's financial results (in contrast to the income statement). A fiscal year is a period used for publishing a company's annual financial statements as required by regulation in most countries. The choice of the actual fiscal year-end closing is at the discretion of management.

The general practice is to choose a time when any seasonality effect is minimized. As an example, retailing firms often close their fiscal years after Christmas and January sales have ended. There is no direct way to interpret the results from a balance sheet in terms of events during the fiscal year, and any ratio constructed from the balance may not truly represent the borrower's actual situation.

Accrual Accounting

Nearly all companies use accrual accounting, which attempts to match revenues and the expenses that were incurred to generate that activity. This involves the use of such conventions as depreciation that artificially assign a portion of the cost of a fixed asset against sales, possibly over- or understating the true cost of the asset, the economic or physical life or period until obsolescence, and any resulting reported profits. Similar accrual conventions include amortization (for intellectual property) and depletion (for natural resources). These choices affect the comparability of company results.

In both accrual and cash accounting,[6] there are other necessary judgments as to specific protocols used. For example, inventory costing may be LIFO (last in, first out), FIFO (first in, first out), or average cost. Depreciation expense may be calculated over the life of the asset as straight-line (level amounts), or accelerated.[7]

Window Dressing

Because of the fiscal year problem, companies may be tempted to present results consistent with investor, banker, and analyst expectations. Unfortunately, there have been numerous instances of short-term adjustments to critical balance sheet accounts that are reversed the following business day. Various frauds have been sustained by such practices. The Sarbanes-Oxley Act of 2002 was

enacted to induce greater honesty and transparency in the presentation of financial results by U.S. public companies.[8]

Aggregated Data

Various accounts use aggregated data in ratios, such as the following:

- Current ratio
  - Current assets, including cash, accounts receivable, and inventory
  - Current liabilities, including accounts payable, notes payable, and accruals
- Working capital (as current assets and current liabilities are netted)
- Leverage (as current liabilities and long-term liabilities are summed)
- Profitability (as net profits are the net result of the income statement calculation)

Such data may misrepresent the actual position of the company with respect to specific working capital accounts.

Off–Balance Sheet Obligations

Companies may be obligated for or have arrangements for debts that are not recorded on the balance sheet, including leases, contingent liabilities, unused lines of credit, and special purpose entities (SPEs) (sometimes known as special purpose vehicles [SPVs]) that may be construed as a responsibility of the entity. SPEs became a key element in the failure of Enron, when investments that were losing money were moved off of the balance sheet and into SPEs.[9] Contingent liabilities or off–balance sheet obligations arise from either of the following:

- Past events, the existence of which will be confirmed only by the occurrence of one or more uncertain future events not wholly within the entity's control, such as a lawsuit.
- A present obligation, such as an operating lease, that arises from past events but is not recognized because either it is not probable that a transfer of economic benefits will be required to settle the obligation or because current accounting conventions do not require its recognition.

Off–balance obligations can significantly alter the profitability and net worth of the borrower.

SUMMARY

The performance of working capital accounts is traditionally measured using significant ratios to examine a company's financial statements, allowing the determination of how performance has changed over time and/or against competitors. The four sets of ratios in general use calculate liquidity, activity utilization, financial leverage, and profitability as compared to such standard sources as RMA and *Troy's Almanac*. There are various other ratios that these two sources publish. In addition, there are benchmarking metrics that can be used to measure a company's performance against "best" industry practices.

NOTES

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.
2. Leo Troy, *Almanac of Business and Industrial Financial Ratios* (Commerce Clearing House [CCH]), and RMA (Risk Management Association), *Annual Statement Studies*. Both sources are published annually. Selected ratios are also at *Value Line* (published by Value Line Inc.), Standard and Poor's Industry Surveys, Dun & Bradstreet, and financial websites like hoovers.com. The sources discussed in this chapter are available in the business reference sections of many libraries. See Appendix II for a listing of useful references and websites. Troy can also be located at http://books.google.com/books?id = 5nEsDHfsfFwC&printsec = frontcover&dq = almanac+of+business+and+industrial+financial+ratios&hl = en&sa = X&ei = YOwwU6K7GKiIyAG6_IHIDQ&ved = 0CEYQ6AEwAA#v = onepage&q = almanac%20of%20business%20and%20industrial%20financial%20ratios&f = false. The various industry sources derive their data from the Internal Revenue Service (U.S. Department of the Treasury), which provides a statistical sampling of the tax returns of all companies.
3. In 1987, FASB (Financial Accounting Standards Board) Statement No. 95 (FAS 95) established this requirement.
4. ERP systems are discussed in Chapter 11.
5. A leading expert on the fallacies of strategic planning is Henry Mintzberg, who wrote *The Rise and Fall of Strategic Planning* (New York: Free Press, 1994). A more recent exposé is his *Strategy Safari*, coauthored with Joseph Lampel and Bruce Ahlstrand (New York: Free Press, 2005).
6. In contrast to accrual accounting, **cash accounting** records revenues when they are received and expenses when they are actually paid. No attempt is made to match revenues and costs incurred as in accrual accounting.

7. The two accelerated depreciation methods in general use are double-declining and sum-of-years digits. **Double-declining** uses the formula: Depreciation expense = 2 × Straight-line depreciation percent × [(Book value at beginning of period – Salvage value) – Accumulated depreciation)]. **Sum-of-the-years digits** takes the asset's expected life and adds together the digits for each year. If the asset was expected to last for four years, the sum of the years' digits would be obtained by adding: 4 + 3 + 2 + 1 to get a total of 10. Each digit is then divided by this sum to determine the percentage by which the asset should be depreciated each year, starting with the highest number in year 1.
8. For a discussion of accounting window dressing, see Herve Stlowy and Gaetan Breton, "Accounts Manipulation: A Literature Review and Proposed Conceptual Framework," *Review of Accounting & Finance* 3 (2004): 5–68; and Lyn M. Fraser, *Understanding the Corporate Annual Report: Nuts, Bolts and a Few Loose Screws* (Upper Saddle River, NJ: Prentice-Hall, 2002).
9. For a discussion of this situation, see Steven L. Schwarcz, "Enron and the Use and Abuse of Special Purpose Entities in Corporate Structures," *University of Cincinnati Law Review* 70 (2006): 1309–1318.