chapter

11

Understanding Accounting

After reading this chapter, you should be able to:

LO-1 Explain the role of *accountants* and distinguish among the three types of *professional accountants* in Canada.

LO-2 Explain how the *accounting equation* is used.

LO-3 Describe three basic *financial statements* and show how they reflect the activity and financial condition of a business.

LO-4 Explain the key standards and principles for reporting financial statements.

LO-5 Explain how computing *financial ratios* can help in analyzing the financial strengths of a business.

What's the Latest on Pension Accounting?

The dramatic decline of the stock market in 2008 created large pension shortfalls because the market value of the assets that pension plans held declined sharply. The Ontario Teachers' Pension Plan, for example, posted an 18 percent loss in 2008 (the fund's value declined by $21 billion), and the Ontario Municipal Employees Retirement System (OMERS) lost 15.3 percent. As of 2008, GM Canada's pension plan was under-funded by more than $6 billion, which meant that workers would receive only 50 percent of what they thought they were going to get. The Canada Pension Plan (CPP) has also been hard hit. During the second quarter of fiscal 2009, the CPP fund declined in value by 6.7 percent ($7.9 billion).

In 2007, the typical pension plan was 96 percent funded (i.e., the market value of a pension plan's assets nearly equalled its liabilities), but in 2008 the typical pension plan was only 59 percent funded. By 2009, the typical pension plan had improved to 74 percent funded because the stock market had gained back some of what it lost in 2008. But more than half of all pension plans still are less than 80 percent funded, and they will need to achieve returns of 7.5 percent annually for the next 15 years just to return to fully funded status.

The problems in pension plans have been caused by a variety of factors, but two stand out. First, recent returns on investments held by pension plans have been much lower than anticipated. In the 1990s, returns on pension plan investments averaged 11 percent (higher than the 7.5 percent that had been predicted). But during the economic downturn of 2001–2003, the average rate of return for pension plan investments was just 3.1 percent, well below the 7 percent that had been assumed. And during 2008–2009, pension funds *lost* 15 to 30 percent of their value. Second, because pension plan investments had achieved such high returns in the 1990s, many companies took contribution

How Will This Help Me?

By understanding the material presented in this chapter, you'll benefit in three ways: (1) if you're an *entrepreneur* thinking about starting your own business, you'll discover your obligations for reporting your firm's financial status, (2) as an *employee* or *manager*, you'll better understand how your company's operations influence its financial performance, and (3) as an *investor*, you'll learn how to interpret financial statements so that you can evaluate a company's financial condition and its prospects for the future.

"holidays" and did not contribute anything to the plans they were sponsoring. With the lower investment returns of the twenty-first century, pension surpluses quickly became pension deficits.

The simplest solution to the pension problem is to drop defined *benefit* pension plans (which guarantee employees a certain level of income during retirement) and replace them with defined *contribution* pension plans (which simply require a company to contribute a certain amount of money each year). With defined contribution plans, the company's liability is known, but the value of the pension when an employee retires is unknown (its value is determined solely by the rate of return that the investments in the plan have achieved). Defined contribution plans obviously reduce uncertainty for the company, but increase uncertainty for retirees.

Companies are, in fact, shifting to defined contribution pension plans. In the United States, for example, there were 112 000 defined benefit plans in 1985, but now there are fewer than 30 000. The move away from defined benefit plans is also occurring in Canada, although at a slower rate. But the change is likely to accelerate, since Canadian legislation requires companies to bear the full financial burden of pension deficits. The current crisis in defined benefit plans means that over the next five years, billions of extra dollars will have to be put into those plans to make up for past investment losses. Companies, therefore, have an incentive to move away from defined benefit plans and toward defined contribution plans because with the latter they at least know what their contribution requirements are.

Canadian accounting rules may also need to be re-examined. Under current rules, companies can delay recognizing changes in the value of their pension plans. Using a practice called "smoothing," companies can spread the reporting of changes over several years. When stock markets were booming, no one scrutinized pension plans much because their value was going up. But when stock markets started dropping, large liabilities began building up (but companies kept that information off their balance sheets). National Bank Financial studied 79 Canadian companies—representing 80 percent of the capitalization of the S&P/TSX—and found that their off-balance-sheet pension deficits totalled $21 billion.

Canadian and international accounting regulators are working on changes to accounting rules that will bring more realism to pension reporting. The most obvious change involves ending the practice of smoothing and reporting pension fund returns as they actually take place. This means that income from the pension fund would be reported as investment income and the costs of running the pension fund would be reported as expenses. Regulators recognize that a change like this will increase the volatility in the earnings that corporations report, but they point out that investors will be able to more clearly see what is happening (good or bad) in a company's pension fund. Unfortunately, the economic problems that developed in 2008 made it very difficult to end the practice of smoothing. In fact, companies were given even more time (10 years) to make up for pension shortfalls.

ACCOUNTING
A comprehensive system for collecting, analyzing, and communicating financial information.

BOOKKEEPING
Recording accounting transactions.

ACCOUNTING INFORMATION SYSTEM (AIS)
An organized procedure for identifying, measuring, recording, and retaining financial information so that it can be used in accounting statements and management reports.

What Is Accounting?

Accounting is a comprehensive information system for collecting, analyzing, and communicating financial information. Itmeasures business performance and translates the findings into information for management decisions. Accountants prepare performance reports for owners, the public, and regulatory agencies. To perform these functions, accountants keep records of such transactions as taxes paid, income received, and expenses incurred, and they analyze the effects of these transactions on particular business activities. By sorting, analyzing, and recording thousands of transactions, accountants can determine how well a business is being managed and how financially strong it is. **Bookkeeping** is just one phase of accounting—the recording of accounting transactions.

Because businesses engage in many thousands of transactions, ensuring that financial information is consistent and dependable is mandatory. This is the job of the **accounting information system (AIS)**: an organized procedure for identifying, measuring, recording, and retaining financial information so that it can be used in accounting statements and management reports. The system includes all of the people, reports, computers, procedures, and resources for compiling financial transactions.[1] The boxed insert entitled "The Green

Revolution Hits Accounting" describes several ways that accountants are becoming more environmentally responsible.

Users of accounting information are numerous:

- *Business managers* use accounting information to set goals, develop plans, set budgets, and evaluate future prospects.
- *Employees and unions* use accounting information to get paid and to plan for and receive such benefits as health care, insurance, vacation time, and retirement pay.
- *Investors and creditors* use accounting information to estimate returns to stockholders, determine a company's growth prospects, and determine whether it is a good credit risk before investing or lending.
- *Tax authorities* use accounting information to plan for tax inflows, determine the tax liabilities of individuals and businesses, and ensure that correct amounts are paid on time.
- *Government regulatory agencies* rely on accounting information to fulfill their duties. Provincial securities regulators, for example, require firms to file financial disclosures so that potential investors have valid information about a company's financial status.

THE GREENING OF BUSINESS

The Green Revolution Hits Accounting

In accounting, there is one important activity that impacts the environment, and that is the use of paper for all those financial statements. But the electronic revolution has provided accountants with the opportunity to reduce paper waste; to quickly respond to clients; to reduce the costs associated with storing, tracking, and accessing documents; and to work virtually anywhere in the world via the internet. Traditional accounting firms spend a lot of valuable time handling paperwork such as invoices. A paperless system eliminates the need to store paper invoices by storing their digital images and retrieving the images as needed. Firms now have easier access to more data, facilitating analyses that can save thousands of dollars.

There are real incentives for companies to embrace environmentally friendly business practices like saving paper. But careful thought has to be given to how this will be done because of the well-known tendency of human beings to resist change. To resolve any resistance that is based on *technical* concerns, management must ensure that the IT infrastructure is working properly and that there is an adequate storage and security system. To deal with resistance that is based on *emotional* concerns, management needs to provide incentives to motivate people to change to the new system. Digital files, for example, reduce the need to travel in order to share documents with clients and other associates. This also enables companies to reduce their dependency on a traditional work environment because more employees can choose to work flexible hours and have a more balanced work and family life. Another incentive is the increased efficiency that will be evident with the use of electronic technology. Increased efficiency means that a given amount of work can be done with fewer people than were previously needed, and this will increase competitiveness.

It is anticipated that accounting firms will increasingly train their clients to perform more of the initial data entry to allow for the electronic exchange of information. Firms will no longer be limited by geographic boundaries. They can also bill for higher-level accounting tasks and be much more selective about their clients. These new methods will help eliminate the bottom 10 to 20 percent of unproductive clients and allow more time to cultivate the profitable files.

Critical Thinking Questions

1. There are clearly benefits for firms that embrace green accounting practices, but are there also benefits to clients? If so, describe them.
2. Why might there be reluctance on the part of accounting firms or their clients to embrace green initiatives like paperless systems?

CONTROLLER The individual who manages all the firm's accounting activities.

FINANCIAL ACCOUNTING SYSTEM The process whereby interested groups are kept informed about the financial condition of a firm.

MANAGERIAL (OR MANAGEMENT) ACCOUNTING Internal procedures that alert managers to problems and aid them in planning and decision making.

CHARTERED ACCOUNTANT (CA) An individual who has met certain experience and education requirements and has passed a licensing examination; acts as an outside accountant for other firms.

CERTIFIED GENERAL ACCOUNTANT (CGA) An individual who has completed an education program and passed a national exam; works in private industry or a CGA firm.

LO-1 Who Are Accountants and What Do They Do?

At the head of the accounting system is the **controller**, who manages all of the firm's accounting activities. As chief accounting officer, the controller ensures that the accounting system provides the reports and statements needed for planning, controlling, and decision-making activities. This broad range of activities requires different types of expertise among accounting specialists. We begin our discussion by distinguishing between the two main fields of accounting: *financial* and *managerial*. Then we discuss the different functions and activities of the three professional accounting groups in Canada.

Financial and Managerial Accounting

As we have just seen, it is important to distinguish between users of accounting information who are outside a company and users who are inside the company.

Financial Accounting A firm's **financial accounting system** is concerned with *external* users of information such as consumer groups, unions, stockholders, and government agencies. Companies prepare and publish income statements and balance sheets at regular intervals, as well as other financial reports that are useful for stockholders and the general public. All of these documents focus on the activities of the company *as a whole*, rather than on individual departments or divisions.

Managerial Accounting In contrast, **managerial** (or **management**) **accounting** serves *internal* users. Managers at all levels need information to make decisions for their departments, to monitor current projects, and to plan for future activities. Other employees also need accounting information. Engineers, for instance, want to know the costs for materials and production so that they can make product operation improvements. To set performance

A financial report is an integral component of the financial accounting system.

goals, salespeople need data on past sales by geographic region. Purchasing agents use information on material costs to negotiate terms with suppliers.

Professional Accountants

Three professional accounting organizations have developed in Canada to certify accounting expertise.

Chartered Accountants The Canadian Institute of Chartered Accountants (CICA) grants the **chartered accountant (CA)** designation. To achieve this designation, a person must earn a university degree, then complete an educational program and pass a national exam. About half of all CAs work in CA firms that offer accounting services to the public; the other half work in government or industry. CA firms typically provide audit, tax, and management services. CAs focus on external financial reporting, that is, certifying for various interested parties (stockholders, lenders, the Canada Revenue Agency, etc.) that the financial records of a company accurately reflect the true financial condition of the firm. In 2008, there were about 74 000 CAs in Canada.[2]

Certified General Accountants The Certified General Accountants Association of Canada grants the **certified general accountant (CGA)** designation. To become a CGA, a person must comlete an education program and pass a national exam; to be eligible, a person must have an accounting job with a company. CGAs can audit corporate financial statements in most provinces. Most CGAs work in private companies, but there are a few CGA firms. Some CGAs also work in CA firms. CGAs also focus

on external financial reporting, and emphasize the use of the computer as a management accounting tool. In 2008, there were about 71 000 CGAs in Canada, the Caribbean, and China.[3]

Certified Management Accountants The Society of Management Accountants of Canada grants the **certified management accountant (CMA)** designation. To achieve the designation, a person must have a university degree, pass a two-part national entrance examination, and complete a strategic leadership program while gaining practical experience in a management accounting environment. CMAs work in organizations of all sizes, and focus on applying best management practices in all of the operations of a business. CMAs bring a strong market focus to strategic management and resource deployment, synthesizing and analyzing financial and non-financial information to help organizations maintain a competitive advantage. CMAs emphasize the role of accountants in the planning and overall strategy of the firm in which they work. In 2008, there were about 40 000 CMAs in Canada, with an additional 10 000 students in the program.[4]

Accounting Services

CAs and CGAs usually perform several accounting services for their clients. The most common of these are auditing, tax services, and management services.

Auditing In an **audit**, accountants examine a company's AIS to ensure that it adheres to **generally accepted accounting principles (GAAP)**—a body of theory and procedure developed and monitored by the CICA. An audit involves examination of receipts such as shipping documents, cancelled cheques, payroll records, and cash receipts records. In some cases, an auditor may physically check inventories, equipment, or other assets, even if it means descending 200 metres into an underground mine. At the end of an audit, the auditor will certify whether the client's financial reports comply with GAAP.

International accounting standards In a globalized economy, users of financial information want assurances that accounting procedures are comparable from country to country. So, the International Accounting Standards Board (IASB) has developed International Financial Reporting Standards (IFRS), a sort of "global GAAP," which is now being used by more than 100 countries.[5] Canadian companies adopted the IFRS on January 1, 2011, but it required a lot of work to determine how to present accounting information in a way that satisfies the new standards.[6] IASB financial statements require an income statement, balance sheet, and statement of cash flows, which are similar to those that have historically been developed by Canadian accountants, but a uniform format is not required and there is a lot of variety. Some accounting experts argue that IFRS gives managers too much leeway to report the figures they want, and that means less protection for investors.[7] The U.S. resisted the adoption of IFRS, and in 2010 the IASB announced that it would no longer pursue convergence of standards with the U.S. as a key objective.[8]

The new IASB standards may have a noticeable impact on the way Canadian companies report some financial results. For example, suppose a company has a customer loyalty plan that gives customers points for purchases they make, and then these points can be redeemed for free products. If a customer makes $1000 in purchases and earns points that can be redeemed for $25 worth of merchandise, the company may have historically counted the $1000 as sales revenue and then also counted the $25 as sales revenue when the points were redeemed. But under the new IFRS, companies cannot add the $25 to the original $1000. The new rules will reduce the apparent same-stores sales growth numbers for these companies.[9]

CERTIFIED MANAGEMENT ACCOUNTANT (CMA)
An individual who has completed a university degree, passed a national examination, and completed a strategic leadership program; works in industry and focuses on internal management accounting.

AUDIT
An accountant's examination of a company's financial records to determine if it used proper procedures to prepare its financial reports.

GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP)
Standard rules and methods used by accountants in preparing financial reports.

Detecting fraud In recent years, there has been much publicity about the alleged failure of auditors to detect fraud. Therefore, when audits are being conducted, **forensic accountants** may be used to track down hidden funds in business firms. Because white-collar crime is on the increase, the number of forensic accountants has increased in recent years. The boxed insert entitled "Opportunities in Forensic Accounting" gives more information on this interesting career path.

Tax Services Tax services include helping clients not only with preparing their tax returns but also in their tax planning. Tax laws are complex, and an accountant's advice can help a business structure (or restructure) its operations and investments and save millions of dollars in taxes. To serve their clients best, of course, accountants must stay abreast of changes in tax laws—no simple matter.

MANAGEMENT CONSULTING SERVICES Specialized accounting services to help managers resolve a variety of problems in finance, production scheduling, and other areas.

PRIVATE ACCOUNTANT An accountant hired as a salaried employee to deal with a company's day-to-day accounting needs.

Management Consulting Services **Management consulting services** range from personal financial planning to planning corporate mergers. Other services include plant layout and design, marketing studies, production scheduling, computer feasibility studies, and design and implementation of accounting systems. Some CA firms even assist in executive recruitment. Small wonder that the staffs of CA firms include engineers, architects, mathematicians, and even psychologists.

Private Accountants

Private accountants are salaried employees who deal with a company's day-to-day accounting needs. Large businesses employ specialized accountants in such areas as budgets, financial planning, internal auditing, payroll, and taxation. In a small firm, a single individual may handle all accounting tasks. The work of private accountants varies, depending on the nature of the specific business and the activities needed to make that business a success. An internal auditor at Petro-Canada,

MANAGING IN TURBULENT TIMES

Opportunities in Forensic Accounting

Anyone who watches television knows about the forensic investigations that police officers conduct as they try to catch the bad guys (think *CSI: Miami*). It's pretty interesting stuff. But did you know that forensics is also very relevant to the field of accounting? The numerous corporate financial scandals of the last few years have caused an increase in demand for forensic accountants—individuals who investigate the financial transactions of companies in order to determine if something fishy is going on. According to the latest Kroll Global Fraud Report, companies lost an average of $8.2 million to fraud in the past three years, largely because of the credit crunch and tough economic climate.

Fraud examiners interview high-level executives, pursue tips from employees or outsiders, and comb through emails, searching for suspicious words and phrases. The CA designation in investigative and forensic accounting (CA IFA) provides in-depth knowledge and experience in investigative and forensic accounting. This is accomplished through a profession-endorsed certification process that has ongoing experience and education requirements. Individuals who pursue a career in IFA are well positioned to practise in areas such as fraud and economic loss quantification. Some of their responsibilities include testifying as expert witnesses, investigating and analyzing financial evidence, and getting involved in criminal investigations (especially in the rapidly evolving area of computer and internet fraud).

Most of the publicity about financial scandals focuses on large companies, but forensic investigation is needed in businesses of all shapes and sizes. The Atlantic Lottery Corporation, for example, hired a forensic accounting firm to review the operations of its small, individually owned lottery retail outlets when reported winnings were higher than statistically possible. That led to widespread concerns that some retailers were cheating by pocketing prizes won by other players who weren't properly notified of their winnings.

At the other end of the size scale, a major multinational consumer-goods producer became concerned when one of its best-known products began to lose market share in Europe because a competitor was selling its brand at a substantially lower price. Kroll was asked to determine whether the competitor's actions were legitimately supported by lower production costs or whether they reflected unfair market practices. After considerable research, Kroll discovered that the competitor had indeed found a novel means of production that sharply reduced its costs without reducing the quality of its product. Kroll recommended that the company license the technology so that it could also achieve lower costs.

Critical Thinking Questions

1. Visit the Canadian Institute of Chartered Accountants (www.cica.ca) website. How much emphasis is placed on forensic accounting? How does a person become a forensic accountant?
2. Interview a forensic accountant and ask the following questions: (a) What general approach do forensic accountants take when investigating the financial statements of companies? and (b) What specific techniques are used to determine whether accounting fraud has occurred?

for example, might fly to the Hibernia site to confirm the accuracy of oil-flow meters on the offshore drilling platform. But a supervisor responsible for $200 million in monthly accounts payable to vendors and employees may travel no further than the executive suite.

The Accounting Cycle Private accountants use a six-step process to develop and analyze a company's financial reports (see Figure 11.1). The first step is to analyze data that are generated as a result of the company's regular business operations (sales revenue, income tax payments, interest income, inventory purchases, etc.). These transactions are entered in a *journal* (which lists them in chronological order) and then in a *ledger* (which shows the increases and decreases in the various asset, liability, and equity accounts). Then the ledger amounts for each account are listed in a *trial balance* (which assesses the accuracy of the figures). Financial statements (balance sheet, income statement, and statement of cash flows) are then prepared, using GAAP. The last step in the process involves analyzing the financial statements (for example, by using ratio analysis). Many years ago, these steps were done laboriously by hand, but now computers are used to help private accountants efficiently work through the six steps.

LO-2 The Accounting Equation

All accountants, whether public or private, rely on record keeping. Underlying all record-keeping procedures is the most basic tool of accounting: the **accounting equation**. At various points in the year, accountants use the following equation to balance the data pertaining to financial transactions:

Assets = Liabilities + Owners' equity

After each transaction (e.g., payments to suppliers, sales to customers, wages to employees), the accounting equation must be in balance. To understand the importance of this equation, we must understand the terms *assets*, *liabilities*, and *owners' equity*.[10]

ACCOUNTING EQUATION
Assets = Liabilities + Owners' Equity; the formula used by accountants to balance data for the firm's financial transactions at various points in the year.

ASSET
Anything of economic value owned by a firm or individual.

LIABILITY
Any debt owed by a firm or individual to others.

OWNERS' EQUITY
Any positive difference between a firm's assets and its liabilities; what would remain for a firm's owners if the company were liquidated, all its assets were sold, and all its debts were paid.

Assets and Liabilities

An **asset** is any economic resource that is expected to benefit a firm or an individual who owns it. Assets include land, buildings, equipment, inventory, and payments due to the company (accounts receivable). A **liability** is a debt that the firm owes to an outside party.

Owners' Equity

You may have heard of the equity that a homeowner has in a house—that is, the amount of money that could be made by selling the house and paying off the mortgage. Similarly, **owners' equity** is the amount of money that owners would receive if they sold all of a company's assets and paid all of its liabilities. We can rewrite the accounting equation to highlight this definition:

Assets − Liabilities = Owners' equity

If a company's assets exceed its liabilities, owners' equity is *positive*; if the company goes out of business, the owners will receive some cash (a gain) after selling assets and paying

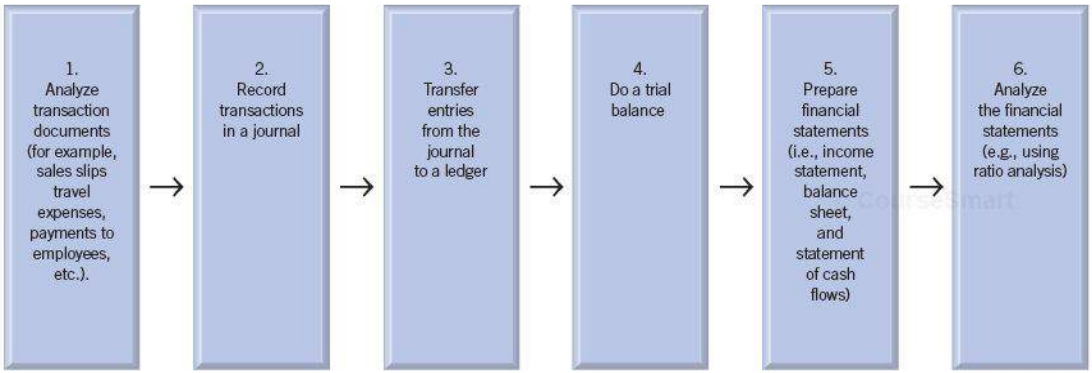


Figure 11.1
The accounting cycle.

DOUBLE-ENTRY ACCOUNTING SYSTEM A bookkeeping system, developed in the fifteenth century and still in use, that requires every transaction to be entered in two ways—how it affects assets and how it affects liabilities and owners' equity—so that the accounting equation is always in balance.

FINANCIAL STATEMENTS Any of several types of broad reports regarding a company's financial status; most often used in reference to balance sheets, income statements, and/or statements of cash flows.

BALANCE SHEET A type of financial statement that summarizes a firm's financial position on a particular date in terms of its assets, liabilities, and owners' equity.

CURRENT ASSETS Cash and other assets that can be converted into cash within a year.

LIQUIDITY The ease and speed with which an asset can be converted to cash; cash is said to be perfectly liquid.

ACCOUNTS RECEIVABLE Amounts due to the firm from customers who have purchased goods or services on credit; a form of current asset.

MERCHANDISE INVENTORY The cost of merchandise that has been acquired for sale to customers but is still on hand.

PREPAID EXPENSES Includes supplies on hand and rent paid for the period to come.

The inventory at this auto dealership is among the company's assets. The cars constitute an economic resource because the firm will benefit financially as it sells them.

off liabilities. If liabilities outweigh assets, owners' equity is *negative*; assets are insufficient to pay off all debts. If the company goes out of business, the owners will get no cash and some creditors won't be paid. Owners' equity is meaningful for both investors and lenders. Before lending money to owners, for example, lenders want to know the amount of owners' equity in a business. Owners' equity consists of two sources of capital:

1. The amount that the owners originally invested.
2. Profits earned by and reinvested in the company.

When a company operates profitably, its assets increase faster than its liabilities. Owners' equity, therefore, will increase if profits are retained in the business instead of paid out as dividends to stockholders. Owners' equity also increases if owners invest more of their own money to increase assets. However, owners' equity can shrink if the company operates at a loss or if owners withdraw assets.

LO-3 Financial Statements

If a business purchases inventory with cash, cash decreases and inventory increases. Similarly, if the business purchases supplies on credit, supplies increase and so do accounts payable. Since every transaction affects two accounts, **double-entry accounting systems** are used to record the dual effects of financial transactions. These transactions are reflected in three important **financial statements**: *balance sheets*, *income statements*, and *statements of cash flows*.[11]

Balance Sheets

Balance sheets supply detailed information about the accounting equation factors: assets, liabilities, and owners' equity. Figure 11.2 shows the balance sheet for Perfect Posters.

Assets As we have seen, an asset is any economic resource that a company owns and from which it can expect to derive some future benefit. Most companies have three types of assets: *current*, *fixed*, and *intangible*.

Current Assets **Current assets** include cash, money in the bank, and assets that can be converted into cash within a year. They are normally listed in order of **liquidity**, that is, the ease with which they can be converted into cash. Business debts, for example, can usually be satisfied only through payments of cash. A company that needs cash but does not have it—in other words, a company that is not liquid—may be forced to sell assets at sacrifice prices or even go out of business.

By definition, cash is completely liquid. Marketable securities (e.g., stocks or bonds of other companies, government securities, and money market certificates) are slightly less liquid but can be sold quickly if necessary. Three other non-liquid assets are **accounts receivable** (amounts due from customers who have purchased goods on credit), **merchandise inventory** (merchandise that has been acquired for sale to customers and is still on hand), and **prepaid expenses** (supplies on hand and rent paid for the period to come). Figure 11.2 shows that Perfect Posters' current assets as of December 31, 2009, totalled $57 210.

Fixed Assets **Fixed assets** (e.g., land, buildings, and equipment) have long-term use or value. As buildings and equipment wear out or become obsolete, their value depreciates. Various methods can be used to calculate depreciation, but in its simplest sense, **depreciation** means determining an asset's useful life in years, dividing its worth by that many years, and then subtracting the resulting amount each year. The asset's remaining value therefore decreases each year. In Figure 11.2, Perfect Posters shows fixed assets of $107 880 after depreciation.

Intangible Assets Although their worth is hard to set, intangible assets have monetary value. **Intangible assets** usually include the cost of obtaining rights or privileges such as patents, trademarks, copyrights, and franchise fees. **Goodwill** is the amount paid for an existing business beyond the value of its other assets. Perfect Posters has no goodwill assets, but it does own trademarks and patents for specialized storage equipment. These intangible assets are worth $8000. Larger companies have intangible assets that are worth much more.

FIXED ASSETS Assets that have long-term use or value to the firm, such as land, buildings, and machinery.

DEPRECIATION Distributing the cost of a major asset over the years in which it produces revenues; calculated by each year subtracting the asset's original value divided by the number of years in its productive life.

INTANGIBLE ASSETS Non-physical assets, such as patents, trademarks, copyrights, and franchise fees, that have economic value but whose precise value is difficult to calculate.

GOODWILL The amount paid for an existing business beyond the value of its other assets.

Figure 11.2
Perfect Posters' balance sheet shows clearly that the firm's total assets equal its total liabilities and owners' equity.

Perfect Posters, Inc.
555 Riverview, Toronto, Ontario

Perfect Posters, Inc.
Balance Sheet
As of December 31, 2009

Assets			
Current Assets:			
Cash		$7,050	
Marketable securities		2,300	
Accounts receivable	$26,210		
Less: Allowance of doubtful accounts	(650)	25,560	
Merchandise inventory		21,250	
Prepaid expenses		1,050	
Total current assets			$57,210
Fixed Assets:			
Land		18,000	
Building	65,000		
Less: Accumulated depreciation	(22,500)	42,500	
Equipment	72,195		
Less: Accumulated depreciation	(24,815)	47,380	
Total fixed assets			107,880
Intangible Assets:			
Patents	7,100		
Trademarks	900		
Total intangible assets			8,000
Total assets			$173,090

Liabilities and Owners' Equity			
Current liabilities:			
Accounts payable	$16,315		
Wages payable	3,700		
Taxes payable	1,920		
Total current liabilities			$21,935
Long-term liabilities:			
Notes payable, 8% due 2010	10,000		
Bonds payable, 9% due 2012	30,000		
Total long-term liabilities			40,000
Total liabilities			$61,935
Owners' Equity			
Common stock, $5 par		40,000	
Additional paid-in capital		15,000	
Retained earnings		56,155	
Total owners' equity			111,155
Total liabilities and owners' equity			$173,090

CURRENT LIABILITIES Any debts owed by the firm that must be paid within one year.

ACCOUNTS PAYABLE Amounts due from the firm to its suppliers for goods and/or services purchased on credit; a form of current liability.

LONG-TERM LIABILITIES Any debts owed by the firm that are not due for at least one year.

PAID-IN CAPITAL Any additional money invested in the firm by the owners.

RETAINED EARNINGS A company's net profits less any dividend payments to shareholders.

INCOME STATEMENT (PROFIT-AND-LOSS STATEMENT) A type of financial statement that describes a firm's revenues and expenses and indicates whether the firm has earned a profit or suffered a loss during a given period.

REVENUES Any monies received by a firm as a result of selling a good or service or from other sources such as interest, rent, and licensing fees.

REVENUE RECOGNITION The formal recording and reporting of revenues in the financial statements.

Liabilities **Current liabilities** are debts that must be paid within one year. These include **accounts payable** (unpaid bills to suppliers for materials, as well as wages and taxes that must be paid in the coming year). Perfect Posters has current liabilities of $21 935.

Long-term liabilities are debts that are not due for at least one year. These normally represent borrowed funds on which the company must pay interest. Perfect Posters' long-term liabilities are $40 000.

Owners' Equity The final section of the balance sheet in Figure 11.2 shows owners' equity broken down into *common stock*, *paid-in capital*, and *retained earnings*. When Perfect Posters was formed, the declared legal value of its common stock was $5 per share. By law, this $40 000 ($5 multiplied by 8000 shares) cannot be distributed as dividends. **Paid-in capital** is additional money invested in the firm by its owners. Perfect Posters has $15 000 in paid-in capital.

Retained earnings are net profits minus dividend payments to stockholders. Retained earnings accumulate when profits, which could have been distributed to stockholders, are kept instead for use by the company. At the close of 2009, Perfect Posters had retained earnings of $56 155.

LO-4 Income Statements

The **income statement** is sometimes called a **profit-and-loss statement**, because its description of revenues and expenses results in a figure showing the firm's annual profit or loss. In other words,

Revenues − Expenses = Profit (or loss)

Popularly known as "the bottom line," profit or loss is probably the most important figure in any business enterprise. Figure 11.3 shows the 2009 income statement for Perfect Posters, whose bottom line that year was $12 585. The income statement is divided into three major categories: *revenues*, *cost of goods sold*, and *operating expenses*.

Revenues When a law firm receives $250 for preparing a will or when a supermarket collects $65 from a customer buying groceries, both are receiving **revenues**—the funds that flow into a business from the sale of goods or services. In 2009, Perfect Posters reported revenues of $256 425 from the sale of art prints and other posters.

Revenue Recognition and Matching **Revenue recognition** is the formal recording and reporting of revenues in the financial statements. Although any firm earns revenues continuously as it makes sales, earnings are not reported until the earnings cycle is completed. Revenues are recorded for the accounting period in which sales are completed and collectible (or collected).

Perfect Posters, Inc.
555 Riverview, Toronto, Ontario

Perfect Posters, Inc.
Income Statement
Year ended December 31, 2009

Revenues (gross sales)			**$256,425**
Costs of goods sold:			
Merchandise inventory, January 1, 2009	$22,380		
Merchandise purchases during year	103,635		
Goods available for sale		$126,015	
Less: Merchandise inventory, December 31, 2009		21,250	
Cost of goods sold			**104,765**
Gross profit			**151,660**
Operating expenses:			
Selling and repackaging expenses:			
Salaries and wages	49,750		
Advertising	6,380		
Depreciation—warehouse and repackaging equipment	3,350		
Total selling and repackaging expenses		59,480	
Administrative expenses:			
Salaries and wages	55,100		
Supplies	4,150		
Utilities	3,800		
Depreciation—office equipment	3,420		
Interest expense	2,900		
Miscellaneous expenses	1,835		
Total administration expenses		71,205	
Total operating expenses			**130,685**
Operating income (income before taxes)			20,975
Income taxes			8,390
Net income			**$12,585**

Figure 11.3
Perfect Posters' income statement. The final entry on the income statement, the bottom line, reports the firm's profit or loss.

The **matching** principle states that expenses will be matched with revenues to determine net income for an accounting period.[12] This principle is important because it permits the user of the statement to see how much net gain resulted from the assets that had to be given up to generate revenues during the period covered in the statement.

Cost of Goods Sold In Perfect Posters' income statement, the **cost of goods sold** category shows the costs of obtaining materials to make the products sold during the year. Perfect Posters began 2009 with posters valued at $22 380. Over the year, it spent $103 635 to purchase posters. During 2009, then, the company had $126 015 worth of merchandise available to sell. By the end of the year, it had sold all but $21 250 of those posters, which remained as merchandise inventory. The cost of obtaining the goods sold by the firm was thus $104 765.

Gross Profit (or Gross Margin) To calculate **gross profit** (or **gross margin**), subtract the cost of goods sold from revenues. Perfect Posters' gross profit in 2009 was $151 660 ($256 425 minus $104 765). Expressed as a percentage of sales, gross profit is 59.1 percent ($151 660 divided by $256 425).

Gross profit percentages vary widely across industries. In retailing, Home Depot reports 30 percent; in manufacturing, Harley-Davidson reports 34 percent; and in pharmaceuticals, American Home Products reports 75 percent. For companies with low gross margins, product costs are a big expense. If a company has a high gross margin, it probably has low cost-of-goods-sold but high selling and administrative expenses.

At the end of its accounting period, this pharmaceuticals company will subtract the cost of making the goods that it sells from the revenues it receives from sales. The difference will be its gross profit (or gross margin).

Operating Expenses In addition to costs directly related to acquiring goods, every company has general expenses ranging from erasers to the president's salary. Like cost of goods sold, **operating expenses** are resources that must flow out of a company for it to earn revenues. As you can see in Figure 11.3, Perfect Posters had operating expenses of $130 685 in 2009. This figure consists of $59 480 in selling and repackaging expenses and $71 205 in administrative expenses.

Selling expenses result from activities related to selling the firm's goods or services. These may include salaries for the sales force, delivery costs, and advertising expenses. General and administrative expenses, such as management salaries, insurance expenses, and maintenance costs, are expenses related to the general management of the company.

Operating Income and Net Income Sometimes managers calculate **operating income**, which compares the gross profit from business operations against operating expenses. This calculation for Perfect Posters ($151 660 minus $130 685) reveals an operating income, or *income before taxes*, of $20 975. Subtracting income taxes from operating income ($20 975 minus $8390) reveals **net income** (also called **net profit** or **net earnings**). In 2009, Perfect Posters' net income was $12 585.

MATCHING Expenses should be matched with revenues to determine net income for an accounting period.

COST OF GOODS SOLD Any expenses directly involved in producing or selling a good or service during a given time period.

GROSS PROFIT (GROSS MARGIN) A firm's revenues (gross sales) less its cost of goods sold.

OPERATING EXPENSES Costs incurred by a firm other than those included in cost of goods sold.

OPERATING INCOME Compares the gross profit from business operations against operating expenses.

NET INCOME (NET PROFIT OR NET EARNINGS) A firm's gross profit less its operating expenses and income taxes.

STATEMENT OF CASH FLOWS A financial statement that describes a firm's generation and use of cash during a given period.

Statements of Cash Flows

In order to survive, a business must earn a *profit* (that is, its sales revenues must exceed its expenses), but it must also make sure it has *cash* available when it needs it (for example, to pay employees). Cash flow management requires the development of a **statement of cash flows**, which describes a company's yearly cash receipts and

BUDGET A detailed financial plan for estimated receipts and expenditures for a period of time in the future, usually one year.

SOLVENCY RATIOS Ratios that estimate the financial risk that is evident in a company.

SHORT-TERM SOLVENCY RATIO Financial ratio for measuring a company's ability to pay immediate debts.

CURRENT RATIO Financial ratio for measuring a company's ability to pay current debts out of current assets.

DEBT A company's total liabilities.

cash payments. It shows the effects on cash of three important business activities:

- *Cash flows from operations.* This part of the statement is concerned with the firm's main operating activities: the cash transactions involved in buying and selling goods and services. It reveals how much of the year's profits result from the firm's main line of business (for example, Jaguar's sales of automobiles) rather than from secondary activities (for example, licensing fees that a clothing firm paid to Jaguar for using the Jaguar logo on shirts).
- *Cash flows from investing.* This section reports net cash used in or provided by investing. It includes cash receipts and payments from buying and selling stocks, bonds, property, equipment, and other productive assets.
- *Cash flows from financing.* The final section reports net cash from all financing activities. It includes cash inflows from borrowing or issuing stock, as well as outflows for payment of dividends and repayment of borrowed money.

The overall change in cash from these three sources provides information to lenders and investors. When creditors and stockholders know how firms obtained and used their funds during the course of a year, it is easier for them to interpret the year-to-year changes in the firm's balance sheet and income statement.

The Budget: An Internal Financial Statement

In addition to financial statements, managers need other types of accounting information to aid in internal planning, controlling, and decision making. Probably the most crucial internal financial statement is the budget. A **budget** is a detailed statement of estimated receipts and expenditures for a period of time in the future. Although that period is usually one year, some companies also prepare budgets for three- or five-year periods, especially when considering major capital expenditures.

Budgets are also useful for keeping track of weekly or monthly performance. Procter & Gamble, for example, evaluates all of its business units monthly by comparing actual financial results with monthly budgeted amounts. Discrepancies in "actual versus budget" totals signal potential problems and initiate action to get financial performance back on track.

LO-5 Analyzing Financial Statements

Financial statements present a great deal of information, but what does it all mean? How, for example, can statements help investors decide what stock to buy or help managers decide whether to extend credit? Statements provide data, which in turn can be used to compute solvency, profitability, and activity ratios that are useful in analyzing the financial health of a company compared to other companies, and to check a firm's progress by comparing its current and past statements.

Solvency Ratios

What are the chances that a borrower will be able to repay a loan and the interest due? This question is first and foremost in the minds of bank lending officers, managers of pension funds and other investors, suppliers, and the borrowing company's own financial managers. **Solvency ratios** measure the firm's ability to meet its debt obligations.

Short-Term Solvency Ratios **Short-term solvency ratios** measure a company's liquidity and its ability to pay immediate debts. The most commonly used ratio is the **current ratio**, which reflects a firm's ability to generate cash to meet obligations through the normal, orderly process of selling inventories and collecting revenues from customers. It is calculated by dividing current assets by current liabilities. The higher a firm's current ratio, the lower the risk to investors. For many years, the guideline was a current ratio was one of 2:1 or higher—which meant that current assets were at least double current liabilities. More recently, many firms that are financially strong operate with current ratios of less than 2:1.

How does Perfect Posters measure up? Look again at the balance sheet in Figure 11.2. Judging from its current assets and current liabilities at the end of 2009, we see that the company looks like a good credit risk:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\$57210}{\$21935} = 2.61$$

Long-Term Solvency A firm that can't meet its long-term debt obligations is in danger of collapse or takeover—a risk that makes creditors and investors quite cautious. To evaluate a company's risk of running into this problem, creditors turn to the balance sheet to see the extent to which a firm is financed through borrowed money. Long-term solvency is calculated by dividing **debt**—total liabilities—by owners' equity. The lower a firm's debt, the lower the risk to

investors and creditors. Companies with **debt-to-equity ratios** above 1.0 may be relying too much on debt. In the case of Perfect Posters, we can see from the balance sheet in Figure 11.2 that the debt-to-equity ratio calculates as follows:

$$\frac{\text{Debt}}{\text{Owners' equity}} = \frac{\$61\,935}{\$111\,155} = \$0.56$$

Sometimes, high debt can be not only acceptable but also desirable. Borrowing funds gives a firm **leverage**—the ability to make otherwise unaffordable investments. In *leveraged buyouts*, firms have sometimes taken on huge debt in order to get the money to buy out other companies. If owning the purchased company generates profits above the cost of borrowing the purchase price, leveraging makes sense. Unfortunately, many buyouts have caused problems because profits fell short of expected levels or because rising interest rates increased payments on the buyer's debt.

Profitability Ratios

Although it is important to know that a company is solvent, safety or risk alone is not an adequate basis for investment decisions. Investors also want some measure of the returns they can expect. Return on equity, return on sales, and earnings per share are three commonly used **profitability ratios** (sometimes these are called *shareholder return ratios* or *performance ratios*).

Return on Equity Owners are interested in the net income earned by a business for each dollar invested. **Return on equity** measures this performance by dividing net income (recorded on the income statement, Figure 11.3) by total owners' equity (recorded on the balance sheet, Figure 11.2). For Perfect Posters, the return-on-equity ratio in 2009 is:

$$\frac{\text{Net income}}{\text{Total owners' equity}} = \frac{\$12\,585}{\$111\,155} = 11.3\%$$

Is this ratio good or bad? There is no set answer. If Perfect Posters' ratio for 2009 is higher than in previous years, owners and investors should be encouraged. But if 11.3 percent is lower than the ratios of other companies in the same industry, they should be concerned.

Return on Sales Companies want to generate as much profit as they can from each dollar of sales revenue they receive. The **return on sales** ratio is calculated by dividing net income by sales revenue (see Figure 11.3). For Perfect Posters, the return on sales ratio for 2009 is:

$$\frac{\text{Net income}}{\text{Sales revenue}} = \frac{\$12\,585}{\$256\,425} = 4.9\%$$

Is this figure good or bad? Once again, there is no set answer. If Perfect Posters' ratio for 2009 is higher than in previous years, owners and investors should be encouraged, but if 4.9 percent is lower than the ratios of other companies in the same industry, they will likely be concerned.

Earnings per Share **Earnings per share**—which is calculated by dividing net income by the number of shares of common stock outstanding—influences the size of the dividend a company can pay to its shareholders. Investors use this ratio to decide whether to buy or sell a company's stock. As the ratio gets higher, the stock value increases because investors know that the firm can better afford to pay dividends. The market value of a stock will typically decline if the latest financial statements report a decline in earnings per share. For Perfect Posters, we can use the net income total from the income statement in Figure 11.3 to calculate earnings per share as follows:

$$\frac{\text{Net income}}{\text{Number of common shares outstanding}} = \frac{\$12\,585}{\$8000} = \$1.57 \text{ per share}$$

Activity Ratios

Activity ratios measure how efficient a company is in using the resources that it has. Potential investors want to know which company gets more "mileage" from its resources. For example, suppose that two firms use the same amount of resources or assets. If Firm A generates greater profits or sales, it is more efficient and thus has a better activity ratio.

One of the most important activity ratios is the **inventory turnover ratio**, which calculates the average number of times that inventory is sold and restocked during the year.[13] Once a company knows its *average inventory* (which is calculated by adding end-of-year inventory to beginning-of-year inventory and dividing by 2), it can

DEBT-TO-EQUITY RATIOS A form of debt ratio calculated as total liabilities divided by owners' equity.

LEVERAGE Using borrowed funds to make purchases, thus increasing the user's purchasing power, potential rate of return, and risk of loss.

PROFITABILITY RATIOS Measures of a firm's overall financial performance in terms of its likely profits; used by investors to assess their probable returns.

RETURN ON EQUITY A form of profitability ratio calculated as net income divided by total owners' equity.

RETURN ON SALES Ratio calculated by dividing net income by sales revenue.

EARNINGS PER SHARE A form of profitability ratio calculated as net income divided by the number of common shares outstanding.

ACTIVITY RATIOS Measures of how efficiently a firm uses its resources; used by investors to assess their probable returns.

INVENTORY TURNOVER RATIO An activity ratio that measures the average number of times inventory is sold and restocked during the year.

The inventory turnover ratio measures the average number of times that a store sells and restocks its inventory in one year. The higher the ratio, the more products that get sold and the more revenue that comes in. In almost all retail stores, products with the highest ratios get the shelf space that generates the most customer traffic and sales.

calculate the inventory turnover ratio, which is expressed as the cost of goods sold divided by average inventory:

$$\frac{\text{Cost of goods sold}}{\text{Average inventory}} = \frac{\text{Cost of goods sold}}{(\text{Beginning inventory} + \text{Ending inventory}) \div 2}$$

To calculate Perfect Posters' inventory turnover ratio for 2009, we take the merchandise inventory figures for the income statement in Figure 11.3. The ratio can be expressed as follows:

$$\frac{\$104\,765}{(\$22\,380 + \$21\,250) \div 2} = 4.8$$

In other words, new merchandise replaces old merchandise every 76 days (365 days divided by 4.8). The 4.8 ratio is below the industry average of 7.0 for comparable wholesaling operations, indicating that the business is somewhat inefficient.

Summary of Learning Objectives

1. **Explain the role of *accountants* and distinguish among the three types of *professional accountants* in Canada.** By collecting, analyzing, and communicating financial information, accountants provide business managers and investors with an accurate picture of a firm's financial health. *Chartered Accountants* (CAs) and *Certified General Accountants* (CGAs) provide accounting expertise for client organizations that must report their financial condition to external stakeholders. *Certified Management Accountants* (CMAs) provide accounting expertise for the firms that employ them.
2. **Explain how the *accounting equation* is used.** Accountants use the following equation to balance the data pertaining to financial transactions:

   Assets − Liabilities = Owners' Equity

   After each financial transaction (e.g., payments to suppliers, sales to customers, wages to employees), the accounting equation must be in balance. If it isn't,

then an accounting error has occurred. The equation also provides an indication of the firm's financial health. If assets exceed liabilities, owners' equity is positive; if the firm goes out of business, owners will receive some cash (a gain) after selling assets and paying off liabilities. If liabilities outweigh assets, owners' equity is negative; assets aren't enough to pay off debts. If the company goes under, owners will get no cash and some creditors won't be paid, thus losing their remaining investments in the company.

3. **Describe three basic *financial statements* and show how they reflect the activity and financial condition of a business.** The *balance sheet* summarizes a company's assets, liabilities, and owners' equity at a given point in time. The *income statement* details revenues and expenses for a given period of time and identifies any profit or loss. The *statement of cash flows* reports cash receipts and payment from operating, investing, and financial activities.
4. **Explain the key standards and principles for reporting financial statements.** Accountants follow standard reporting practices and principles when they prepare financial statements. Otherwise, users wouldn't be able to compare information from different companies, and they might misunderstand—or be led to misconstrue—a company's true financial status. *Revenue recognition* is the formal recording and reporting of revenues in financial statements. The earnings cycle is complete when the sale has been made, the product is delivered, and the sale price has been collected or is collectible. This practice assures interested parties that the statement gives a fair comparison of what was gained for the resources that were given up. The *matching* principle states that expenses will be matched with revenues to determine net income for an accounting period. This permits the user of the statement to see how much net gain resulted from the assets that had to be given up to generate revenues during the period covered in the statement.
5. **Explain how computing *financial ratios* can help in analyzing the financial strengths of a business.** Drawing upon data from financial statements, ratios can help creditors, investors, and managers assess a firm's finances. The *current*, *liquidity*, and *debt-to-owners' equity ratios* all measure solvency, a firm's ability to pay its debt in both the short and long runs. *Return on sales*, *return on equity*, and *earnings per share* are all ratios that measure profitability. The *inventory turnover ratio* shows how efficiently a firm is using its funds.

Questions and Exercises

Questions for Analysis

1. Balance sheets and income statements are supposed to be objective assessments of the financial condition of a company. But the accounting scandals of the last few years show that certain pressures may be put on accountants as they audit a company's financial statements. Describe these pressures. To what extent do these pressures make the audit more subjective?
2. If you were planning to invest in a company, which of the three types of financial statements would you want most to see? Why?
3. A business hires a professional accountant like a CA or CGA to assess the financial condition of the company. Why would the business also employ a private accountant?
4. Why does the double-entry system reduce the chances of mistakes or fraud in accounting?
5. How do financial ratios help managers to monitor their own efficiency and effectiveness?
6. Explain the difference between financial and managerial accounting. In your answer, describe the different audiences for the two types of accounting and the various individuals involved in the process.

Application Exercises

7. Dasar Co. reports the following data in its September 30, 2010, financial statements:
   - Gross sales $225 000
   - Current assets 40 000
   - Long-term assets 100 000
   - Current liabilities 16 000
   - Long-term liabilities 44 000
   - Owners' equity 80 000
   - Net income 7 200
   - Number of common shares 5 000

   Compute the following ratios: current ratio, debt-to-equity, return on owners' equity, and earnings per share.
8. Interview an accountant at a local manufacturing firm. Determine what kinds of budgets the firm uses, and the process by which budgets are developed. Also

determine how budgeting helps managers plan their business activities. Give specific examples.

9. Interview the manager of a local retail or wholesale business. Ask the manager about the company's primary purpose for taking inventory, and how often this is done.
10. Interview the manager of a local business and ask about the role of ethics in the company's accounting practices. How important is ethics in accounting? What measures does the firm take to ensure that its internal reporting is ethical? What steps does the company take to maintain ethical relationships in its dealing with external CA or CGA firms?

TEAM EXERCISES

Building Your Business Skills

Putting the Buzz in Billing

Goal

To encourage students to think about the advantages and disadvantages of using an electronic system for handling accounts receivable and accounts payable.

Method

Step 1 As the CFO of a utility company, you are analyzing the feasibility of switching from a paper to an electronic system. You decide to discuss the ramifications of the choice with three associates (choose three classmates to take on these roles). Your discussion requires that you research electronic payment systems now being developed. Specifically, using online and library research, you must find out as much as you can about the electronic bill-paying systems being developed by companies like VISA International, Intuit, IBM, and the Checkfree Corporation.

Step 2 After you have researched this information, brainstorm the advantages and disadvantages of switching to an electronic system.

Follow-Up Questions

1. What cost savings are inherent in the electronic system for both your company and its customers? In your answer, consider such costs as handling, postage, and paper.
2. What consequences would your decision to adopt an electronic system have on others with whom you do business, including manufacturers of cheque-sorting equipment, Canada Post, and banks?
3. Switching to an electronic system would mean a large capital expense for new computers and software. How could analyzing the company's income statement help you justify this expense?
4. How are consumers likely to respond to paying bills electronically? Are you likely to get a different response from individuals than you get from business customers?

Exercising Your Ethics

Confidentially Yours

The Situation

Accountants are often entrusted with private, sensitive information that should be used confidentially. In this exercise, you're encouraged to think about ethical considerations that might arise when an accountant's career choices come up against a professional obligation to maintain confidentiality.

The Dilemma

Assume that you're the head accountant in Turbatron, a large electronics firm that makes components for other manufacturing firms. Your responsibilities include preparing Turbatron's financial statements that are then audited for financial reporting to shareholders. In addition, you regularly prepare confidential budgets for internal use by managers responsible for planning departmental activities, including future investments in new assets. You've also worked with auditors and CA consultants that assess financial problems and suggest solutions.

Now let's suppose that you're approached by another company, Electrolast, one of the electronics industry's most successful firms, and offered a higher-level position. If you accept, your new job will include developing Electrolast's financial plans and serving on the strategic planning committee. Thus, you'd be involved not only in developing strategy but also in evaluating the competition, perhaps even using your knowledge of Turbatron's competitive strengths and weaknesses.

Your contractual commitments with Turbatron do not bar you from employment with other electronics firms.

Team Activity

Assemble a group of four to five students and assign each group member to one of the following roles:

- Head accountant (leaving Turbatron)
- General manager of Turbatron
- Shareholder of Turbatron
- Customer of Turbatron
- General manager of Electrolast (if your group has five members)

Action Steps

1. Before hearing any of your group's comments on this situation, and from the perspective of your assigned role, decide if there are any ethical issues confronting the head accountant in this situation. If so, write them down.
2. Return to your group and reveal ethical issues identified by each member. Were the issues the same among all roles or did differences in roles result in different issues?
3. Among the ethical issues that were identified, decide as a group which one is most important for the head accountant. Which is most important for Turbatron?
4. What does your group finally recommend be done to resolve the most important ethical issue(s)?
5. What steps do you think Turbatron might take in advance of such a situation to avoid any difficulties it now faces?

BUSINESS CASE 11

Who Will Take the Blame?

The negative publicity that has been given to firms like Livent, Enron, Parmalat, and WorldCom during the last decade has made for very interesting reading, but it has also made auditors nervous. More and more investors are asking questions like, "How much confidence can I really have when I read in an auditor's statement that a company's practices adhere to generally accepted accounting principles?" or "How can a company go bankrupt shortly after having its books audited by an independent auditor?" Two recent high-profile cases have been evident at Lehman Brothers in the U.S. and Livent in Canada.

In 2008, an executive at Lehman Brothers wrote a letter to senior management expressing his concern that the company was concealing the true risks on its balance sheet and therefore misleading investors about its financial condition. The board of directors instructed the company's auditors (Ernst & Young) to interview the executive and investigate his concerns. The auditors did so, but when they met with the board of directors, the auditors did not mention the executive's allegations. Not too long afterward, Lehman Brothers went bankrupt.

In 2010, a report by a bankruptcy-court examiner concluded that Lehman's auditors knew of accounting irregularities but did nothing about them. In its defence, Ernst & Young pointed out that Lehman's management had concluded that the allegations originally made by the executive were unfounded. It also noted that its review of the executive's allegations was not completed because Lehman Brothers went bankrupt. As of mid-2010, authorities were in the process of deciding whether to prosecute some of Lehman's top executives for manipulating the company's financial statements. If they decide to go ahead with the prosecution, it is likely that the executives will use the defence that they relied on the firm's auditors to determine if financial reporting had been properly done (Ernst & Young said that some questionable transactions complied with generally acceptable accounting principles). When executives blame the auditors and the auditors blame the executives, it is very frustrating. *Someone* is to blame for the problems.

The case of Livent Inc.—a live theatre company that formerly had theatres in Vancouver, Toronto, and

New York—further illustrates the tendency to shift the blame for problems to someone else. Livent went bankrupt in the late 1990s amid charges of questionable accounting practices. After nearly a decade of court delays, two of its executives—Garth Drabinsky and Myron Gottlieb—were found guilty in 2009 of defrauding investors and creditors out of $500 million. Investors lost 95 percent of their investment after Livent first disclosed accounting irregularities in 1998. (For more details about the Livent case, see the opening case in Chapter 3.)

Several years before the 2009 court ruling, the Institute of Chartered Accountants of Ontario (ICAO) had already taken disciplinary action against Livent's senior vice-president of finance, who was a chartered accountant. He was fined $25 000 and expelled from the ICAO after admitting that he had filed false financial statements and fraudulently manipulated Livent's books. The ICAO then laid charges of professional misconduct against three partners at Deloitte & Touche, the accounting firm that was auditing Livent. (Deloitte also faced several other lawsuits, including one resulting from the collapse of the Italian dairy firm Parmalat. In that case, investors sued Parmalat executives and two partners in Deloitte's Italian branch for allegedly conspiring to hide nearly $17 billion of debt.)

At a disciplinary hearing, the lawyer for Deloitte & Touche argued that the ICAO charges were "rubbish," and that the allegations were simply differences of opinion regarding the application of generally accepted accounting principles. He also pointed out that Livent managers had admitted lying to Deloitte auditors to prevent them from finding out about Livent's real financial condition. In 2007, the ICAO decided that the three partners at Deloitte were guilty of professional misconduct during their audit of Livent's books (a report stating the ICAO's reasons for their decision was published some months later). Each partner received a written reprimand, was fined $100 000, and was required to pay costs of $417 000. Deloitte appealed the ICAO's decision, arguing that the faulty audit didn't necessarily mean there was professional misconduct.

The CEO of Deloitte says that there is an "expectation gap" between what the investing public expects and what external auditors can possibly deliver. While auditors simply certify the accuracy of a company's financial statements (based on information provided by the company), investors want auditors to certify that a company is actually financially healthy. He also says that it is not reasonable to hold auditing firms accountable for the illegal and secretive behaviour of corporate executives. He does agree that auditing firms will have to improve the rigour of their audits, and he said that Deloitte has been working hard to overcome any existing deficiencies. The company has appointed an ethics officer in each of its national companies, has added more resources to audit teams, and re-checks initial audit results.

The CEO's explanation sounds pretty reasonable, but people still want to know how cases like Livent, Parmalat, and Enron happen even after the companies' financial statements have been audited by an independent accounting firm. One answer is that auditors are sometimes tempted to "look the other way" when they encounter questionable practices. But *why* would accounting firms not point out questionable accounting practices when they find them? One reason is that many accounting firms have historically also done management consulting for the firms they are auditing. The fees generated from this management consulting can be very lucrative, and often exceed the auditing fees the accounting firm receives. Accountants are human beings, so we should not be surprised if they worry that their clients will be upset if auditors question certain accounting practices. And if clients get upset enough, they may not give the accounting firm any more management consulting contracts. The obvious solution to this problem is to prohibit accounting firms from doing both auditing and management consulting for a given client. The Canadian Imperial Bank of Commerce no longer allows its auditors to do any management consulting for CIBC.

One very specific Canadian response is the establishment of the Canadian Public Accountability Board (CPAB), which oversees supervision, inspection, and discipline of Canada's largest accounting firms. Accounting firms must get CPAB clearance before their clients' financial statements are accepted. In short, the auditors are going to be audited. Since the CPAB was formed, several individuals have had their chartered accountant certifications revoked as a result of professional misconduct or violation of securities laws.

We should not conclude from all of this that doom and gloom reigns in the auditing business. In fact, things are looking up, partly because of the Sarbanes-Oxley Act, which was passed by the U.S. Congress in 2002 and is designed to restore public trust in corporate accounting practices. Section 404 of the Act requires U.S.-listed companies to analyze their reporting controls and to make any improvements that are necessary. At each year-end, auditors must certify these controls. Many people in the accounting field believe that Canadian legislators will soon introduce similar legislation. That will affect over 4000 Canadian corporations, which in turn will create a substantial increase in demand for the services of auditors. Canadian public accounting firms have already begun recruiting more staff. The increased demand for accountants who are knowledgeable about Sarbanes-Oxley is particularly evident in places like Calgary, the home of many Canadian companies that are listed on U.S. stock exchanges.

Questions for Discussion

1. What role does the Institute of Chartered Accountants of Ontario (ICAO) play in ensuring full disclosure on the part of accountants and auditors? How does the ICAO monitor auditor activity and maintain integrity within the accounting profession? What is its relationship to the CPAB?
2. What are some ways to ensure that an auditing firm does not find itself in the position that Deloitte & Touche did in the Livent case?
3. Do you think business practices like disclosure and auditing proceedings will change as a result of the Sarbanes-Oxley Act? Do you think the number of fraud allegations will decline? Explain your answers.
4. There has been much publicity in the last few years about white-collar fraud. Give some examples of fraud that you are familiar with. What role, if any, did accounting fraud play in these cases?

Appendix B
Using Technology to Manage Information in the Internet and Social Media Era

INFORMATION TECHNOLOGY (IT)
The various devices for creating, storing, exchanging, and using information in diverse modes, including visual images, voice, multimedia, and business data.

Throughout the text we examine how the internet and the emergence of social media have improved communications, revolutionized distribution, augmented human resources practices, revolutionized industries (and threatened others), developed new marketing communication channels, and changed the most basic business systems. In this appendix we will begin by providing additional information about the internet and social media. We will also examine the evolving role of technology in managing information.

Internet Usage

Before we look into the specifics, let's examine some of the key Canadian internet statistics. In 2009, approximately 80 percent of Canadians (21.7 million) over the age of 16 used the internet. That figure was up from 73 percent two years earlier. The statistics are even more impressive for higher income families; 94 percent of Canadians that live in households with incomes above $85 000 are connected (only 56 percent for households with incomes below $30 000 per year).[1] These figures will continue to increase in the next few years. The federal government has set its sights on increasing and improving the connectivity in rural settings; it invested in 52 projects worth over $225 million in 2010. At the time, it cost approximately $89 per month for 5Mbps (megabits per second) in most rural areas, but consumers could get 10Mbps for about $47 a month in most cities, or get 50mbps (10 times quicker speed) for about the same fee. The improved infrastructure will help increase rural access and build further opportunities for companies wishing to sell to rural Canadian clients and also provide more incentive and opportunity for small businesses to operate in rural settings.[2]

The Impact of Information Technology (IT)

No matter where we go, we can't escape the impact of **information technology (IT)**—the various devices for creating, storing, exchanging, and using information in diverse modes, including visual images, voice, multimedia, and business data. We see ads all the time for the latest smart phones, iPods, laptops, iPads, netbooks, and software products, and most of us connect daily to the internet (many of you never disconnect). Email and BlackBerry (BBM) messaging have become staples in business, and even such traditionally "low-tech" businesses as hair salons and garbage collection companies are becoming dependent on the internet, computers, and networks. As consumers, we interact with databases every time we withdraw money from an ATM, order food at McDonald's, use an Apple application to order food or movie tickets, or check on the status of a package at UPS or FedEx.

IT has had an immense effect on businesses—in fact, the growth of IT has changed the very structure of business organizations. Its adoption has altered the workforces in many companies, contributed to greater flexibility in dealing with customers, and changed the way that employees interact with each other. E-commerce has created new market relationships around the globe. We begin by looking at how businesses are using IT to bolster productivity, improve operations and processes, create new opportunities, and communicate and work in ways not possible before.

The Impact of the Internet on Marketing

E-commerce refers to buying and selling processes that make use of electronic technology, while **internet marketing** refers to the promotional efforts of companies to sell their products and services to consumers over the internet.[3]

While internet marketing has some obvious advantages for both buyers (access to information, convenience, etc.) and sellers (reach, direct distribution, etc.) it also has weaknesses, including profitability problems (many internet marketers are still unprofitable and the failure rates are high); information overload (consumers may not know what to do with all the information available to them), and somewhat limited markets (consumers who use the web are typically more highly educated).

In addition to these weaknesses, internet marketers must also cope with consumer concerns about two security-related issues. An Angus Reid/Globe and Mail poll of 1500 Canadians found that their main concern about internet marketing was security. People who had made at least one purchase on the internet were more likely to list security as their top concern than were those who had never purchased anything on the internet. In particular, people were concerned that their credit card number might end up in the wrong hands, and that their privacy would be invaded if they purchased on the internet.[4]

Consumers also object to spyware software, which monitors websites they visit and observes their shopping habits. This software is often implanted on their personal computers as they wander through the web. It then generates pop-up advertisements that are targeted to that particular consumer. Because people are often unaware that such spyware is on their computer, the technique has generated anger among consumers. Consumers can, however, get free anti-spyware software that removes spyware from their computer. Spyware is also a concern for companies that sell from their own websites because the pop-ups are designed to divert web surfers from the products offered by the website.[5]

Creating Portable Offices: Providing Remote Access to Instant Information

The packing list for Barry Martin's upcoming fishing trip reflects his new outlook on how he gets his work done. It reads, in part, as follows: (1) fly rod, (2) dry-pack food, (3) tent, and (4) BlackBerry. Five years ago, a much longer list would have included a cellphone, road and area maps, phone directory, appointments calendar, office files, and client project folders, all of which are now replaced by just one item—his BlackBerry—a wireless handheld messaging device that allows him to take the office with him wherever he goes. Even in the Canadian wilderness, Martin can place phone calls and read new email messages. Along with internet browsing, there's access to desktop tools—such as an organizer and an address book—for managing work and staying in touch with customers, suppliers, and employees from any location. The mobile messaging capabilities of devices like the BlackBerry offer businesses powerful tools that save time and travel expenses.[6] As we describe in Chapter 12's E-Business and Social Media Solutions box, "Apps, Apps, and More Apps," the range of current applications is immense and enlarging to meet the needs of business and consumers.

E-COMMERCE
Buying and selling processes that make use of electronic technology.

INTERNET MARKETING
The promotional efforts of companies to sell their products and services to consumers over the internet.

Barack Obama is an avid BlackBerry user. This picture is indicative of the times we live in. Think of how often you see classmates and work colleagues walking down a hall with a smartphone in hand.

Enabling Better Service by Coordinating Remote Deliveries

With access to the internet, company activities may be geographically scattered but remain coordinated through a networked system that provides better service for customers. Many businesses, for example, coordinate activities from one centralized location, but their deliveries flow from several remote locations, often at lower cost. When you order furniture from an internet storefront—for example, a chair, a sofa, a table, and two lamps—the chair may come from a warehouse in Toronto, the lamps from a manufacturer in China, and the sofa and table from a supplier in North Carolina. Beginning with the customer's order, activities are coordinated through the company's network, as if the whole order were being processed at one place. This avoids the expensive in-between step of first shipping all the items to a central location.

Creating Leaner, More Efficient Organizations

Networks and technology are also leading to leaner companies with fewer employees and simpler structures. Because networks enable firms to maintain information linkages between employees and customers, more work and customer satisfaction can be accomplished with fewer people. Bank customers can access 24-hour information systems and monitor their accounts without employee assistance. Instructions that once were given to assembly workers by supervisors are now delivered to workstations electronically. Truck drivers delivering freight used to return to the trucking terminal to receive instructions from supervisors on reloading for the next delivery, but now instructions arrive on electronic screens in the trucks so drivers know in advance what will be happening next.

Enabling Increased Collaboration

Collaboration among internal units and with outside firms is greater when firms use collaboration software and other IT communications devices (we discuss these later in this appendix). Companies are learning that complex problems can be solved better through IT-supported collaboration, either with formal teams or spontaneous interaction among people and departments. The design of new products, for example, was once largely an engineering responsibility. Now it is a shared activity using information from people in marketing, finance, production, engineering, and purchasing who, collectively, determine the best design. For example, the design of Boeing's 787 Dreamliner aircraft is the result of collaboration, not just among engineers but also from passengers (who wanted electronic outlets to recharge personal electronic devices), cabin crews (who wanted more bathrooms and wider aisles), and air-traffic controllers (who wanted larger, safer airbrakes).

Enabling Global Exchange

The global reach of IT is enabling business collaboration on a scale that was unheard of just a few years ago. Consider Lockheed Martin's contract for designing the Joint Strike Fighter and supplying thousands of the planes in different versions for Canada, the United States, Britain, Italy, Denmark, and Norway. Lockheed can't do the job alone. Over the project's 20-year life, more than 1500 companies will supply everything from radar systems to engines to bolts. Web collaboration on a massive scale is essential for coordinating design, testing, and construction while avoiding delays, holding down costs, and maintaining quality.[7]

Improving Management Processes

IT has also changed the nature of the management process. At one time, upper-level managers didn't concern themselves with all of the detailed information filtering upward from the workplace because it was expensive to gather, slow in coming, and quickly became out of date. Rather, workplace management was delegated to middle and first-line managers.

With databases, specialized software, and networks, however, instantaneous information is accessible and useful to all levels of management. For example, consider *enterprise resource planning (ERP)*, a system for organizing and managing a firm's activities across product lines, departments, and geographic locations. The ERP stores real-time information on work status and upcoming transactions and notifies employees when action is required if certain schedules are to be met. It coordinates internal operations with activities of outside suppliers and notifies customers of upcoming deliveries and billings. Consequently, more managers use it routinely for planning and controlling operations. A manager at Hershey Foods, for example, uses ERP to check on the current status of any customer order for Hershey Kisses, to inspect productivity statistics for each workstation, and to analyze the delivery performance on any shipment. Managers can better coordinate company-wide performance because

they can identify departments that are working well together and those that are lagging behind schedule and creating bottlenecks.

Providing Flexibility for Customization

IT has also created new manufacturing capabilities that enable businesses to offer customers greater variety and faster delivery cycles. Whether it's a personal computer from Dell, one of Nokia's phones, or a Rawlings baseball glove, today's design-it-yourself world has become possible through fast, flexible manufacturing using IT networks. At Timbuk2's website, for example, you can "build your own" custom messenger bag at different price levels with choices of size, fabric, colour combinations, accessories, liner material, strap, and even left- or right-hand access.[8] The principle is called **mass-customization**: Although companies produce in large volumes, each unit features the unique options the customer prefers. As shown in Figure B.1, flexible production and speedy delivery depend on an integrated network of information to coordinate all the activities among customers, manufacturers, suppliers, and shippers.

MASS-CUSTOMIZATION
Although companies produce in large volumes, each unit features the unique options the customer prefers.

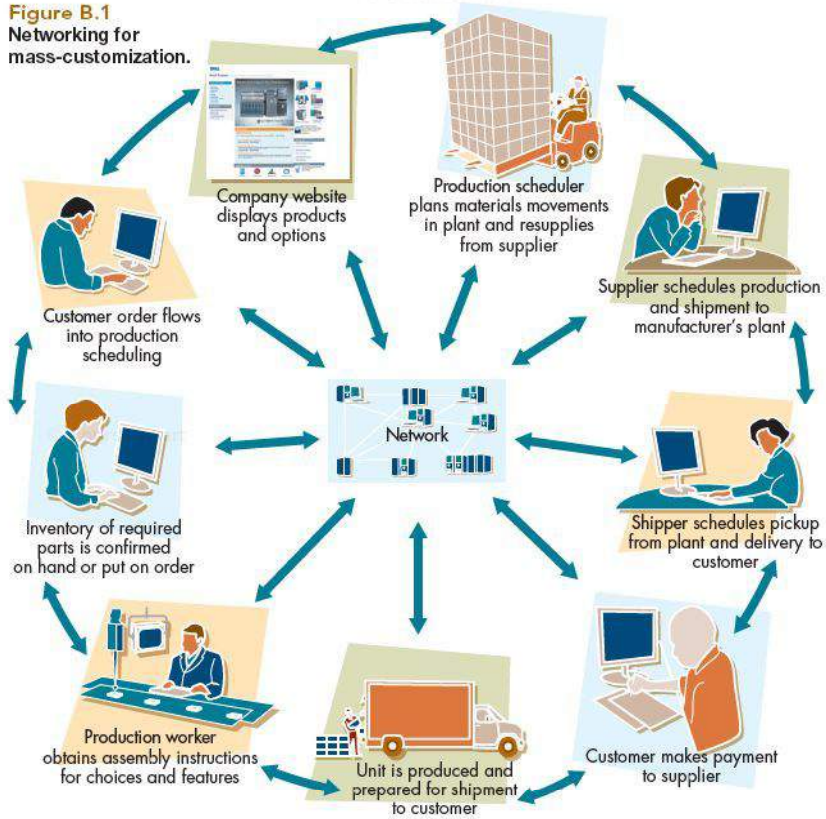
Providing New Business Opportunities

Not only is IT improving existing businesses, it is creating entirely new businesses. For big businesses, this means developing new products, offering new services, and reaching new clients. Only a few years ago, Google was a fledgling search engine. In 2010, the company had nearly $25 billion in cash and short-term investments and it was no longer simply a search engine company; Google had email (Gmail service) and other productivity software, the Android cellphone platform, and YouTube.[9]

The IT landscape has also presented small business owners with new e-business opportunities. More than 600 online marketplaces allow entrepreneurs to sell directly to consumers, bypassing conventional retail outlets, and enable B2B selling and trading with access to a worldwide customer base. To assist start-up businesses, eBay's services network is a ready-made online business model, not just an auction market. Services range from credit financing to protection from fraud and misrepresentation, information security, international currency exchanges, and post-sales management. These features enable users to complete sales transactions, deliver merchandise, and get new merchandise for future resale, all from the comfort of their own homes.

Technology continues to provide new and improved business models. For example, Instinet Inc. was a pioneer

Figure B.1
Networking for mass-customization.



INTERNET A gigantic system of interconnected computers; more than 100 million computers in over 100 countries.

HYPERTEXT TRANSFER PROTOCOL (HTTP) Communications protocol used for the World Wide Web, in which related pieces of information on separate webpages are connected using hyperlinks.

WORLD WIDE WEB A standardized code for accessing information and transmitting data over the Internet; the common language that allows information sharing on the Internet.

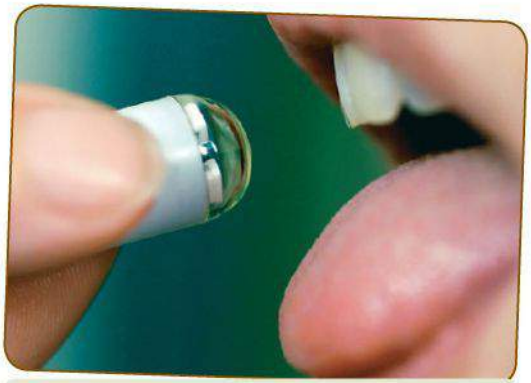
SIMPLE MESSAGE TRANSFER PROTOCOL (SMTP) Basic communications protocol used to send email.

POST OFFICE PROTOCOL (POP) One of the **basic communications protocols** used to receive email.

in electronic trading. In 2010, it launched a service called Meet the Street, which matches companies with potential investors. This service competes directly with investment companies like the Royal Bank of Canada (RBC) and Goldman Sachs that are known for creating "road shows" (days packed with meetings with potential investors). The service enables business owners to book their own meetings, make travel arrangements, suggest dining spots, and use GPS technology to organize meetings efficiently to save time.[10]

Improving the World and Our Lives

Can advancements in IT really make the world a better place? Hospitals and medical equipment companies certainly think so. For example, when treating combat injuries, surgeons at Walter Reed National Military Medical Center in the U.S. rely on high-tech graphics displays that are converted into three-dimensional physical models for pre-surgical planning. These 3-D mock-ups of shoulders, femurs, and facial bones give doctors the opportunity to see and feel the anatomy as it will be seen in the operating room, before they even use their scalpels.[11] Meanwhile, vitamin-sized cameras that patients swallow are providing doctors with computer images of the insides of the human body, helping them to make better diagnoses for such ailments as ulcers and cancer.[12]



After this capsule is swallowed, the camera inside it can transmit 50 000 images during its eight-hour journey through the digestive tract.

Social Networking: Providing a Service

The many forms of social media—blogs, chats, and networks such as LinkedIn, Twitter, and Facebook—are no longer just playthings for gossips and hobbyists. As we examined in Chapter 8 (E-Business and Social Media Solutions box, "Job Recruitment in the Social Media Era") they're also tools for getting a job. The economic meltdown pushed millions of job seekers to online networking—tapping leads from friends, colleagues, and acquaintances—for contacts with companies that may be hiring. Peers and recruiters are networking using electronic discussion forums and bulletin boards at websites of professional associations and trade groups, technical schools, and alumni organizations.

Some social sites provide occupation-specific career coaching and job tips. For example, scientists are connecting with Epernicus, top managers use Meet the Boss, and graduate students are connecting with Graduate Junction.[13]

IT Building Blocks: Business Resources

Businesses today have a wide variety of IT resources at their disposal. In addition to the internet and email, these include communications technologies, networks, hardware devices, and software, as shown at technology media sites such as TechWeb.com.

The Internet's Other Communication Resources

The **internet** is a gigantic system of interconnected computers; these computers are connected by numerous applications utilizing different communications protocols. The most familiar internet protocols are **hypertext transfer protocol (HTTP)**—which is used for the **World Wide Web**, a branch of the internet consisting of interlinked hypertext documents, or webpages—and **simple message transfer protocol (SMTP)** and **post office protocol (POP)**, which are used to send and receive email. For

thousands of businesses, the internet has replaced the telephone, fax machine, and standard mail as the primary communications tool.

The amount of traffic on the internet has increased dramatically over the years, and certain individuals, such as scientists, have found that it is often slow going when they try to transmit or manipulate large databases. So **Internet2** has been created, which is dramatically faster than the regular internet. Internet2 is generally available only to universities, corporations, and government agencies that have applications that put heavy demands on the internet (for example, videoconferencing).

The internet has spawned a number of other business communications technologies, including *intranets*, *extranets*, *electronic conferencing*, and *VSAT satellite communications*.

Intranets Many companies have extended internet technology by maintaining internal websites linked throughout the firm. These private networks, or **intranets**, are accessible only to employees and may contain confidential information on benefits programs, a learning library, production management tools, or product design resources. For firms such as Ford Motor Company, whose intranet is accessible to 200 000 people daily, sharing information on engineering, distribution, and marketing has reduced the lead time for getting new models into production and has shortened customer delivery times.[14]

Extranets **Extranets** allow outsiders limited access to a firm's internal information network. The most common application allows buyers to enter a system to see which products are available for sale and delivery, thus providing convenient product-availability information. Industrial suppliers are often linked into customers' information networks so that they can see planned production schedules and prepare supplies for customers' upcoming operations. **Enterprise portals** allow outsiders like customers to log on to a company's intranet. The extranet at Chaparral Steel, for example, lets customers shop electronically through its storage yards and gives them electronic access to Chaparral's planned inventory of industrial steel products.

Electronic Conferencing **Electronic conferencing** allows groups of people to communicate simultaneously from various locations via email, phone, or video, thereby eliminating travel time and saving money. One form, called *dataconferencing*, allows people in remote locations to work simultaneously on one document. *Videoconferencing* allows participants to see one another on video screens while the conference is in progress. For example, Lockheed Martin's Joint Strike Fighter project, discussed earlier, uses internet collaboration systems with both voice and video capabilities. Although separated by oceans, partners can communicate as if they were in the same room while redesigning components and creating production schedules. Electronic conferencing is attractive to many businesses because it eliminates travel and saves money.

VSAT Satellite Communications Another internet technology businesses use to communicate is **VSAT satellite communications**. VSAT (short for *v*ery *s*mall *a*perture *t*erminal) systems have a transmitter-receiver (*transceiver*) that sits outdoors with a direct line of sight to a satellite. The hub—a ground-station computer at the company's headquarters—sends signals to and receives signals from the satellite, exchanging voice, video, and data transmissions. An advantage of VSAT is privacy. A company that operates its own VSAT system has total control over communications among its facilities, no matter their location, without dependence on other companies. A firm might use VSAT to exchange sales and inventory information, advertising messages, and visual presentations between headquarters and store managers at remote sites.

INTERNET2 Faster than regular internet, Internet2 is generally available only to universities, corporations, and government agencies that have applications with heavy demands.

INTRANETS An organization's private network of internally linked websites accessible only to employees.

EXTRANETS A system that allows outsiders limited access to a firm's internal information network.

ENTERPRISE PORTALS Enable customers to log on to a company's intranet.

ELECTRONIC CONFERENCING IT that allows groups of people to communicate simultaneously from various locations via email, phone, or video.

VSAT SATELLITE COMMUNICATIONS A network of geographically dispersed transmitter-receivers (transceivers) that send signals to and receive signals from a satellite, exchanging voice, video, and data transmissions.

COMPUTER NETWORK A group of two or more computers linked together by some form of cabling or by wireless technology to share data or resources, such as a printer.

Networks: System Architecture

A **computer network** is a group of two or more computers linked together, either hardwired or wirelessly, to share data or resources, such as a printer. The most common type

CLIENT-SERVER NETWORK A common business network in which clients make requests for information or resources and servers provide the services.

WIDE AREA NETWORKS (WANS) Computers that are linked over long distances through telephone lines, microwave signals, or satellite communications.

LOCAL AREA NETWORKS (LANS) Computers that are linked in a small area, such as all of a firm's computers within a single building.

VIRTUAL PRIVATE NETWORKS (VPNS) Connecting two or more LANs through a public network, like the internet, to save money for a firm.

WIRELESS WIDE AREA NETWORKS (WWAN) A network that uses airborne electronic signals instead of wires to link computers and electronic devices over long distances.

of network used in businesses is a **client-server network**. In client-server networks, *clients* are usually the laptop or desktop computers through which users make requests for information or resources. *Servers* are the computers that provide the services shared by users. In big organizations, servers are usually assigned a specific task. For example, in a local university or college network, an *application server* stores the word-processing, spreadsheet, and other programs used by all computers connected to the network. A *print server* controls the printers, stores printing requests from client computers, and routes jobs as the printers become available. An *email server* handles all incoming and outgoing email. With a client-server system, users can share resources and internet connections—and avoid costly duplication.

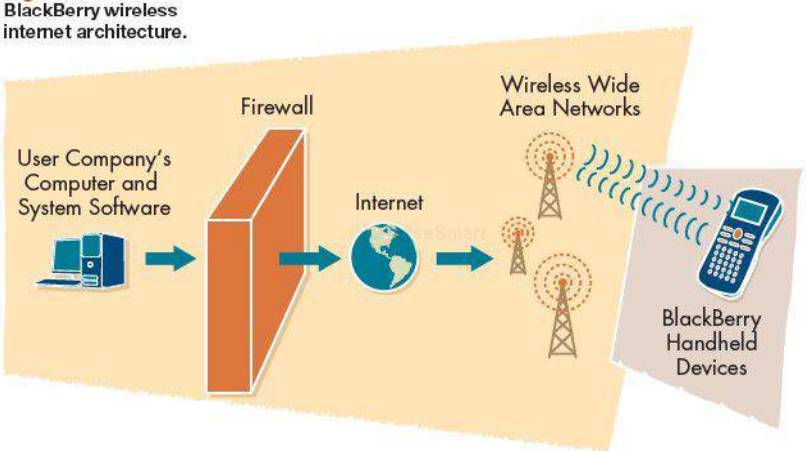
Networks can be classified according to geographic scope and means of connection (either wired or wireless).

Wide Area Networks (WANs) Computers that are linked over long distances—province-wide or even nationwide—through telephone lines, microwave signals, or satellite communications make up what are called **wide area networks (WANs)**. Firms can lease lines from communications vendors or maintain private WANs. Walmart, for example, depends heavily on a private satellite network that links thousands of U.S. and international retail stores to its Bentonville, Arkansas, headquarters.

Local Area Networks (LANs) In **local area networks (LANs)**, computers are linked in a smaller area such as an office or a building. For example, a LAN unites hundreds of operators who enter call-in orders at TV's Home Shopping Network facility. The arrangement requires only one computer system with one database and one software system. **Virtual private networks (VPNs)** connect two or more LANs through a public network like the internet. This saves companies money because they don't have to pay for private lines, but it is important that strong security measures are in place so that unauthorized persons can't gain access.

Wireless Networks Wireless networks use airborne electronic signals to link network computers and devices. Like wired networks, wireless networks can reach across long distances or exist within a single building or small area. For example, the BlackBerry system shown in Figure B.2 consists of devices that send and receive transmissions on the **wireless wide area networks (WWANs)** of more than 100 service providers—such as Cellular One (United States), T-Mobile (United Kingdom and United States), and Vodafone (Italy)—in countries throughout the world. The wireless format that the system relies on to control wireless messaging is supplied by Research In Motion (RIM), the Canadian company that makes the BlackBerry, and is installed on the user-company's computer.[15] A *firewall* provides privacy protection. We'll discuss firewalls in more detail later in the appendix.

Figure B.2
BlackBerry wireless internet architecture.



Wi-Fi *Hotspots* are locations, such as coffee shops, hotels, and airports, that provide wireless internet connections for people on the go. Each hotspot, or **Wi-Fi** (short for *wi*reless *fi*delity) access point, uses

its own small network, called a **wireless local area network (wireless LAN or WLAN)**. Although wireless service is free at some hotspots, others charge a fee—a daily or hourly rate—for the convenience of Wi-Fi service.

Wi-Fi networks have many benefits, for example, employees can wait for a delayed plane in the airport and still be connected to the internet. However, Wi-Fi has limitations, including a short range of distance. In addition, thick walls, construction beams, and other obstacles can interfere with the signals sent out by the network. So, while a city may have hundreds of hotspots, your laptop must remain near one to stay connected. *WiMAX (worldwide interoperability for microwave access),* the next step in wireless advancements, will improve this distance limitation with its wireless range of about 50 kilometres.

Hardware and Software

Any computer network or system needs **hardware**—the physical components, such as keyboards, monitors, system units, and printers. In addition to the laptops, desktop computers, and BlackBerrys, *handheld computers* are also used in businesses. For example, Walmart employees roam store aisles using handhelds to identify, count, and order items, track deliveries, and update backup stock at distribution centres to keep store shelves replenished with merchandise.

The other essential in any computer system is **software**—programs that tell the computer how to function. Software includes *system software*, such as Microsoft Windows 7 for PCs, which tells the computer's hardware how to interact with the software. It also includes *application software*, which meets the needs of specific users (for example, Adobe Photoshop). Some application programs are used to address common, long-standing needs such as database management and inventory control, whereas others have been developed for a variety of specialized tasks ranging from mapping the underground structure of oil fields to analyzing the anatomical structure of the human body. For a subscription fee, companies can gain access to a large number of software application programs from application service providers (ASPs). They therefore don't have to spend a lot of money buying various software programs. Managed service providers (MSPs) go even further, and include management of a company's network servers.

One illustrative example of a software program is **computer graphics**, which converts numeric and character data into pictorial information like charts and graphs. They allow managers to see relationships more easily and generate clearer and more persuasive reports and presentations. As Figure B.3 shows, both types of graphics can convey different kinds of information—in this case, the types of materials that should be ordered by a picture framing shop like Artists' Frame Service.

Groupware—software that connects group members for email distribution, electronic meetings, message

WI-FI Short for wireless fidelity; a wireless local area network.

WIRELESS LOCAL AREA NETWORK (WIRELESS LAN OR WLAN) A local area network with wireless access points for PC users.

HARDWARE The physical components of a computer network, such as keyboards, monitors, system units, and printers.

SOFTWARE Programs that tell the computer's hardware what resources to use and how.

COMPUTER GRAPHICS Programs that convert numeric and character data into pictorial information like charts and graphs.

Apple's iPhone lags far behind in business usage compared to the BlackBerry but new versions are becoming more appealing. iPhones offer a larger keyboard, voice messaging and convenient text editing in addition to its key consumer features (iPod, movie viewing capacity etc.)

GROUPWARE Software that connects group members for email distribution, electronic meetings, message storing, appointments and schedules, and group writing.

INFORMATION SYSTEM (IS) A system that uses IT resources to convert data into information and to collect, process, and transmit that information for use in decision making.

DATA Raw facts and figures that by themselves may not have much meaning.

INFORMATION The meaningful, useful interpretation of data.

INFORMATION SYSTEMS MANAGERS Managers who operate the systems used for gathering, organizing, and distributing information.

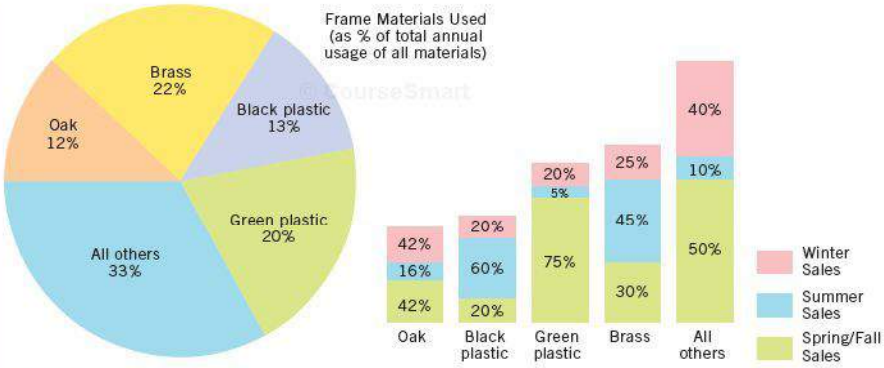


Figure B.3
Artists' Frame Service.

storing, appointments and schedules, and group writing—allows people to collaborate from their own desktop PCs, even if they're remotely located. It is especially useful when people work together regularly and rely heavily on information sharing. Groupware systems include IBM Lotus Domino, Microsoft Exchange Server, and Novell GroupWise.

Information Systems: Harnessing the Competitive Power of Information Technology

Business today relies on information management in ways that no one could foresee even a decade ago. Managers now treat IT as a basic organizational resource for conducting daily business. At major firms, every activity—designing services, ensuring product delivery and cash flow, evaluating personnel—is linked to *information systems*. An **information system (IS)** uses IT resources and enables managers to take **data**—raw facts and figures that by themselves may not have much meaning—and turn that data into **information**—the meaningful, useful interpretation of data. Information systems also enable managers to collect, process, and transmit that information for use in decision making.

One of the most widely publicized examples of the strategic use of information systems is Walmart. The IS drives down costs and increases efficiency because the same methods and systems are applied for all 5000-plus stores in Europe, Asia, and North America. Data on the billions of sales transactions—time, date, place—flows to company headquarters in Bentonville, Arkansas. Keeping track of nearly 700 million *stock keeping units* (SKUs) weekly, the information system enforces uniform reordering and delivery procedures—on packaging, timing, and quantities—for more than 30 000 suppliers. It also regulates the flow of the more than five billion cases through its distribution centres, and deliveries by nearly 8000 Walmart truck drivers, to its stores.

Beyond the firm's daily operations, information systems are also crucial in planning. Managers routinely use the IS to decide on products and markets for the next 5 to 10 years. The company's vast database enables marketing managers to analyze demographics, and it is also used for financial planning, materials handling, and electronic funds transfers with suppliers and customers.

Like most businesses, Walmart regards its information as an asset that's planned, developed, and protected. Therefore, it's not surprising that businesses have **information systems managers** who operate the systems used for gathering, organizing, and distributing information, just as they have production, marketing, and finance managers. These managers use many of the IT resources we discussed earlier to sift through this information and apply it to their jobs. The effective use of information is so critical that many companies have appointed **chief information officers** who are responsible for managing all aspects of information resources and information processes.

There are so many new challenges and opportunities for IT managers. For example, **cloud computing** is a major buzz word in IT circles and it has different meanings to different people. In essence, it refers to internet-based development and use of computer technology. Individuals have been using this approach for years with email and photo sharing (think Google and Flickr). Organizations are now taking a closer look at the prospects of shared data centres through internet technology. At the conceptual level, cloud computing means placing some infrastructure online and having someone else run it rather than doing it in-house. Some of the major advantages promised by this approach include lower costs, quicker set-up, easy scalability, easier software integration, reduced financial risk, decreased downtime, potential services for small business (that otherwise could not afford them), automatic updates that don't disrupt or endanger other systems, and empowered users. It should be interesting to see how this concept evolves into practice over the next few years.[16]

Leveraging Information Resources: Data Warehousing and Data Mining

Almost everything you do leaves a trail of information about you. Your preferences in movie rentals, television viewing, internet sites, and groceries; the destinations of your phone calls, your credit card charges, your financial status; personal information about age, gender, marital status, and even your health are just a few of the items about each of us that are stored in scattered databases. The behaviour patterns of millions of users can be traced by analyzing files of information gathered over time from their internet usage and in-store purchases.

Data Warehousing The collection, storage, and retrieval of such data in electronic files is called **data warehousing**. For managers, the data warehouse is a goldmine of information about their business. Indeed, Kroger Co., the Ohio-based grocery chain, collects data on customer shopping habits to find ways to gain greater customer loyalty. As part owner of a data-mining firm, Kroger accumulates information from its shopper cards, analyzes the data to uncover shopping patterns, and sends money-saving coupons to regular customers for the specific products they usually buy. Kroger's precision targeting pays off, especially in the recession economy. With a rate of coupon usage up to as much as 50 times the industry average, it's a money-saver for Kroger customers and boosts the company's sales, too.[17]

Data Mining After collecting information, managers use **data mining**—the application of electronic technologies for searching, sifting, and reorganizing pools of data to uncover useful information. Data mining helps managers plan for new products, set prices, and identify trends and shopping patterns. By analyzing what consumers actually do, businesses can determine what subsequent purchases they are likely to make and then send them tailor-made ads.

Information Linkages with Suppliers The top priority for Walmart's IS—improving in-stock reliability—requires integration of Walmart's and suppliers' activities with store sales. That's why Procter & Gamble, Johnson & Johnson, and other suppliers connect into Walmart's information system to observe up-to-the-minute sales data on individual items, by store. They can use the system's computer-based tools—spreadsheets, sales forecasting, and weather information—to forecast sales demand and plan delivery schedules. Coordinated planning avoids excessive inventories, speeds up deliveries, and holds down costs throughout the supply chain while keeping shelves stocked for retail customers.

CHIEF INFORMATION OFFICERS Managers who are responsible for managing all aspects of information resources and information processes.

CLOUD COMPUTING Internet-based development and use of computer technology; at the conceptual level, it means placing some infrastructure online and having someone else run it rather than doing it in-house.

DATA WAREHOUSING The collection, storage, and retrieval of data in electronic files.

DATA MINING The application of electronic technologies for searching, sifting, and reorganizing pools of data to uncover useful information.

TRANSACTION PROCESSING SYSTEM (TPS) Applications of information processing for basic day-to-day business transactions.

Types of Information Systems

Since employees have a variety of responsibilities and decision-making needs, a firm's *information system* may actually be a set of several information systems that share data while serving different levels of the organization, different departments, or different operations. One popular information system is called the **transaction processing system (TPS)**, which processes information for many different, day-to-day business transactions like customer order-taking by online retailers, approval of claims at insurance companies, receiving

KNOWLEDGE INFORMATION SYSTEMS Information system that supports knowledge workers by providing resources to create, store, use, and transmit new knowledge for useful applications.

COMPUTER-AIDED DESIGN (CAD) IS with software that helps knowledge workers design products by simulating them and displaying them in three-dimensional graphics.

MANAGEMENT INFORMATION SYSTEM (MIS) Computer system that supports managers by providing information—reports, schedules, plans, and budgets—that can be used for making decisions.

DECISION SUPPORT SYSTEM (DSS) Interactive system that creates virtual business models for a particular kind of decision and tests them with different data to see how they respond.

and confirming reservations by airlines, and payroll processing.

Because they work on different kinds of problems, managers and their subordinates need access to the specialized information systems that satisfy their different information needs. In addition to different types of users, each business *function*—marketing, human resources, accounting, production, finance—has its own information needs, as do groups working on major projects. Each user group and department, therefore, may need a special IS. Two important groups are *knowledge workers* and *managers*.

Information Systems for Knowledge Workers As we discussed in Chapter 8, *knowledge workers* are employees for whom information and knowledge are the raw materials of their work, such as engineers, scientists, and IT specialists who rely on IT to design new products or create new processes. These workers require **knowledge information systems**, which provide resources to create, store, use, and transmit new knowledge for useful applications—for instance, databases to organize and retrieve information, and computational power for data analysis.

Specialized support systems have also increased the productivity of knowledge workers. **Computer-aided design (CAD)** helps knowledge workers design products ranging from cellphones to jewellery to auto parts by simulating them and displaying them in 3-D graphics. The older method—making handcrafted prototypes from wood, plastic, or clay—is replaced with faster, cheaper prototyping: the CAD system electronically transfers instructions to a computer-controlled machine that builds the prototypes.

In archaeology, CAD is helping scientists uncover secrets hidden in fossils using 3-D computer models of skeletons, organs, and tissues constructed with digital data from CT (computed tomography) scans of dinosaur fossils. From these models, scientists have learned, for example, that the giant apatosaurus's neck curved downward, instead of high in the air as once thought. By seeing how the animals' bones fit together with cartilage, ligaments, and vertebrae, scientists are discovering more about how these prehistoric creatures interacted with their environment.[18]

Information Systems for Managers Each manager's information activities and IS needs vary according to his or her functional area (accounting, marketing, etc.) and management level. The following are some popular information systems used by managers for different purposes.

Management Information Systems **Management information systems (MISs)** support managers by providing reports, schedules, plans, and budgets that can then be used for making decisions, both short and long term. For example, at a publishing company, managers rely on detailed information—current customer orders, staffing schedules, employee attendance, production schedules, equipment status, and materials availability— for moment-to-moment decisions during the day. They require similar information to plan such mid-range activities as personnel training, materials movements, and cash flows. They also need to anticipate the status of the jobs and projects assigned to their departments. Many MIS—cash flow, sales, production scheduling, and shipping—are indispensable for helping managers complete these tasks.

For longer-range decisions involving business strategy, managers need information to analyze trends in the publishing industry and overall company performance. They need both external and internal information, current and future, to compare current performance data to data from previous years and to analyze consumer trends and economic forecasts.

Decision Support Systems Managers who face a particular kind of decision repeatedly can get assistance from **decision support systems (DSSs)**—interactive systems that create virtual business models and test them with different data to see how they respond. When faced with decisions on plant capacity, for example, managers can use a capacity DSS. The manager inputs data on anticipated sales, working capital, and customer-delivery requirements. The data flow into the DSS processor, which then simulates the plant's performance under the proposed data conditions. After experimenting with various data conditions, the DSS makes recommendations on the best levels of plant capacity for each future time period.

Artificial Intelligence **Artificial intelligence (AI)** refers to the development of computer systems to imitate human behaviour—in other words, systems that perform physical tasks, use thought processes, and learn. In developing AI systems, business specialists, modellers, and information-technology experts try to design computer-based systems capable of reasoning so that computers, instead of people, can perform certain activities. For example, a credit-evaluation system may decide which loan applicants are creditworthy and which are too risky, and it may then compose acceptance and rejection letters accordingly.

Some AI systems possess sensory capabilities, such as lasers that "see," "hear," and "feel." AND Corp. of Toronto has developed a software program—called Hnet—that can learn to recognize faces. This may seem like a simple thing, but millions of dollars had been spent on this problem, without success until AND Corp. developed the software. The system can be used to improve airport security and to track terrorists.[19]

The **expert system** is designed to imitate the thought processes of human experts in a particular field.[20] Expert systems incorporate the rules that an expert applies to specific types of problems, such as the judgments a physician makes when diagnosing illnesses. In effect, expert systems supply everyday users with "instant expertise." For example, Campbell's developed an expert system to mimic complex decision processes and save the expert knowledge that was going to be lost when a long-time expert soup maker announced his intention to retire.[21]

IT Risks and Threats

As with other technologies throughout history, IT has attracted abusers that are intent on doing mischief, with severity ranging from mere nuisance to outright destruction. Eager IT users everywhere are finding that even social networking and cell phones have a "dark side"—privacy invasion. Facebook postings of personal information about users can be intercepted and misused by intruders. Beacon caused a public uproar when it published peoples' online purchases publicly on their Facebook newsfeeds. This is a problem with cellphone advancements. Bluetooth connections allow savvy intruders to read a victim's text messages, listen in on live conversations, and even view unwary users' photos.[22] Smartphone sales are likely to surpass regular cellphone sales by 2015. This is presenting an increased challenge, since more personal information tends to be contained on these multipurpose devices.[23]

Businesses, too, are troubled with ITs dark side. Hackers break into computers, stealing personal information and company secrets, and launching attacks on other computers. Meanwhile, the ease of information sharing on the internet has proven costly for companies that are having an increasingly difficult time protecting their intellectual property, and viruses that crash computers have cost companies millions. In this section, we'll look at these and other IT risks.

ARTIFICIAL INTELLIGENCE (AI) The development of computer systems to imitate human thought and behaviour.

EXPERT SYSTEM A form of AI designed to imitate the thought processes of human experts in a particular field.

HACKERS Cybercriminal who gains unauthorized access to a computer or network, either to steal information, money, trade secrets, or property or to tamper with data.

IDENTITY THEFT Unauthorized stealing of personal information (such as social insurance number and address) to get loans, credit cards, or other monetary benefits by impersonating the victim.

Hackers

Breaking and entering no longer refers merely to physical intrusion. Today, it applies to IT intrusions as well. **Hackers** are cybercriminals who gain unauthorized access to a computer or network, either to steal information, money, trade secrets, or property, or to tamper with data. Another common hacker activity is to launch *denial of service (DoS) attacks*. DoS attacks flood networks or websites with bogus requests for information and resources, thereby shutting the networks or websites down and preventing legitimate users from accessing them.

Wireless mooching is a profitable industry for cybercriminals. In just five minutes, one newspaper reporter using a laptop found six unprotected wireless networks that were wide open to outside users.[24] Once inside an unsecured wireless network, hackers use it to commit identity theft and to steal credit card numbers, among other things. When police officers try to track down these criminals, they're long gone, leaving you, the network host, exposed to criminal prosecution.

Identity Theft

Once inside a computer network, hackers are able to commit **identity theft**, the unauthorized stealing of personal information (such as social insurance numbers and address) to get loans, credit cards, or other monetary benefits by impersonating the victim. Clever crooks get information on unsuspecting victims by digging in trash, stealing mail, or using *phishing* or *pharming* schemes to lure internet users to bogus websites. For instance,

INTELLECTUAL PROPERTY A product of the mind that has commercial value.

SPYWARE Program unknowingly downloaded by users that monitors their computer activities, gathering email addresses, credit card numbers, and other information that it transmits to someone outside the host system.

SPAM Junk email sent to a mailing list or a newsgroup.

a cybercriminal might send American Online subscribers an email notifying them of a billing problem with their accounts. When the customers click on the AOL Billing Center link, they are transferred to a spoofed (falsified) webpage, modelled after AOL's. The customers then submit the requested information—credit card number, social insurance number, and PIN—into the hands of the thief. Today, consumers are more aware of these scams, but they are still effective. Major organizations like the Canadian Bankers Association and the Competition Bureau are working with organizations to identify patterns and inform consumers.[25]

In Canada, the federal government created privacy legislation in the Personal Information Protection and Electronic Documents Act (PIPEDA) back in 2001. It was designed to promote e-commerce while protecting personal information. The Act outlines the rules for managing personal information in the private sector.[26]

Intellectual Property Theft

Nearly every company faces the dilemma of protecting product plans, new inventions, industrial processes, and other **intellectual property**—something produced by the intellect or mind that has commercial value. Its ownership and right to its use may be protected by patent, copyright, trademark, and other means. Intellectual property theft is evident when, for example, individuals illegally download unpaid-for movies, music, and other resources from file-swapping networks. But the activities are not limited to illegal entertainment downloads. For example, according to the U.S. Intelligence Agency, Chinese cyber spies steal about 40 to 50 billion dollars' worth of intellectual property each year.[27]

Computer Viruses, Worms, and Trojan Horses

Another IT risk facing businesses is rogue programmers who disrupt IT operations by contaminating and destroying software, hardware, or data files. Viruses, worms, and Trojan horses are three kinds of malicious programs that, once installed, can shut down any computer system. A *computer virus* exists in a file that attaches itself to a program and migrates from computer to computer as a shared program or as an email attachment. It does not infect the system unless the user opens the contaminated file, and users typically are unaware they are spreading the virus by file sharing. It can, for example, quickly copy itself over and over again, using up all available memory and effectively shutting down the computer.

Worms are a particular kind of virus that travel from computer to computer within networked computer systems, without your needing to open any software to spread the contaminated file. In a matter of days, the notorious Blaster worm infected some 400 000 computer networks, destroying files and even allowing outsiders to take over computers remotely. The worm replicates itself rapidly, sending out thousands of copies to other computers in the network. Travelling through internet connections and email address books in the network's computers, it absorbs system memory and shuts down network servers, web servers, and individual computers.

Unlike viruses, a *Trojan horse* does not replicate itself. Instead, it most often comes into the computer, at your request, masquerading as a harmless, legitimate software product or data file. Once installed, the damage begins. For instance, it may simply redesign desktop icons or, more maliciously, delete files and destroy information.

Spyware

As if forced intrusion isn't bad enough, internet users unwittingly invite spies—masquerading as a friendly file available as a giveaway or shared among individual users on their PCs. This so-called **spyware** is downloaded by users that are lured by "free" software. Once installed, it crawls around to monitor the host's computer activities, gathering email addresses, credit card numbers, passwords, and other inside information that it transmits back to someone outside the host system. Spyware authors assemble incoming stolen information to create their own "intellectual property" that they then sell to other parties to use for marketing and advertising purposes or for identity theft.[28]

Spam

Spam—junk email sent to a mailing list or a newsgroup (an online discussion group)—is a greater nuisance than postal junk mail because the internet is open to the public, email costs are negligible, and massive mailing lists are accessible through file sharing or by theft. Spam operators send unwanted messages ranging from explicit pornography to hate mail to advertisements to destructive computer viruses. In addition to wasting users' time, spam also consumes a network's bandwidth, thereby

reducing the amount of data that can be transmitted in a fixed amount of time for useful purposes. U.S. industry experts estimate spam's damage in lost time and productivity at more than $140 billion worldwide in 2008 alone.[29]

IT Protection Measures

Security measures against intrusion and viruses are a constant challenge. Businesses guard themselves against intrusion, identity theft, and viruses by using *firewalls*, *special software*, and *encryption*.

Firewalls

Firewalls are security systems with special software or hardware devices designed to keep computers safe from hackers. A firewall is located where two networks—for example, the internet and a company's internal network—meet. It contains two components for filtering each incoming data:

1. The company's *security policy*—Access rules that identify every type of message that the company doesn't want to pass through the firewall.
2. A *router*—A table of available routes or paths, a "traffic switch" that determines which routes or paths on the network to send each message to after it is tested against the security policy.

Only those messages that meet the conditions of the user's security policy are routed through the firewall and permitted to flow between the two networks. Messages that fail the access test are blocked and cannot flow between the two networks.

Preventing Identity Theft

Internet privacy experts say that a completely new identity verification system is needed to stop the rising tide of internet identity theft. One possibility is an "infocard," which would act like a credit card and would allow websites to verify a customer's identity without keeping personal information on the customer. While foolproof prevention is impossible, steps can be taken to reduce the chance that you will be victimized. A visit to the Identity Theft Resource Center (www.idtheftcenter.org) is a valuable first step to get information on everything from scam alerts to victim issues—including assistance on lost and stolen wallets—to media resources, current laws, and prevention of identity theft in the workplace.

Preventing Viruses: Anti-Virus Software

Many viruses take advantage of weaknesses in operating systems in order to spread and propagate. Network administrators must make sure that the computers on their systems are using the most up-to-date operating system that includes the latest security protection. Combating viruses, worms, and Trojan horses has become a major industry for systems designers and software developers. Installation of **anti-virus software** products protects systems by searching incoming email and data files for "signatures" of known viruses and virus-like characteristics. Contaminated files are discarded or placed in quarantine for safekeeping.

FIREWALL Security system with special software or hardware devices designed to keep computers safe from hackers.

ANTI-VIRUS SOFTWARE Product that protects systems by searching incoming emails and data files for "signatures" of known viruses and virus-like characteristics.

ENCRYPTION SYSTEM Software that assigns an email message to a unique code number (digital fingerprint) for each computer so only that computer, not others, can open and read the message.

Protecting Electronic Communications: Encryption Software

Unprotected email can be intercepted, diverted to unintended computers, and opened, revealing contents to intruders. Protective software is available to guard against those intrusions, adding a layer of security by encoding emails so that only intended recipients can open them. An **encryption system** works by scrambling an email message so that it looks like garbled nonsense to anyone who doesn't possess the key.

Avoiding Spam and Spyware

To help their employees avoid privacy invasion and to improve productivity, businesses often install anti-spyware and spam filtering software on their systems. Dozens of anti-spyware products provide protection—software such as Webroot's Spy Sweeper and Microsoft Windows Defender—but they must be continually updated to keep pace with new spyware techniques. While it cannot be prevented entirely, spam is abated by many internet service providers (ISPs) that ban the spamming of ISP subscribers.

While computer security devices—spam filters, data encryption, firewalls, and anti-virus software—catch

a vast number of attempted intrusions, many threats remain, both for individuals and for businesses. In difficult economic times, both individuals and businesses are taken in by schemes that they would likely ignore if they weren't under financial pressure. For example, fake websites, cellphones, and internet-based phones promise high-paying jobs, low-cost loans, and can't-miss lotteries. Cellphone text messages lure bank customers into telephoning account information, saying victims' credit cards have been deactivated. Internet-based phone users receive fake caller-IDs of real hospitals, government agencies, banks, and other businesses in a new form of telephone phishing that talks victims into revealing personal information. Cyber-thieves are using "targeting" (also known as spear phishing) to identify wealthy individuals and professional money managers. Victims receive friendly sounding emails containing contaminated attachments that, once opened, infect their computers, exposing bank account and other identity information to scammers.

Part 3: Managing Operations and Information

Goal of the Exercise

This part of the business plan project asks you to think about your business in terms of both accounting concepts and information technology (IT) needs and costs. See Appendix B for material on IT.

Managing Operations and Information

An increasingly important part of a business plan is a consideration of how IT—computers, the internet, software, and so on—influences businesses. This part of the business plan asks you to assess how you will use technology to improve your business. Will you, for example, use a database to keep track of your customers? How will you protect your business from hackers and other IT security risks?

This part of the business plan also asks you to consider the costs of doing business, such as salaries, rent, and utilities. You'll also be asked to complete the following financial statements:

- *Balance Sheet.* The balance sheet is a foundation for financial reporting. This report identifies the valued items of the business (its *assets*) as well as the debts that it owes (its *liabilities*). This information gives the owner and potential investors a snapshot into the health of the business.
- *Income Statement (or Profit-and-Loss Statement).* This is the focus of the financial plan. This document will show you what it takes to be profitable and successful as a business owner for your first year.

Your Assignment

mybusinesslab

Step 1

Open the saved Business Plan file you have been working on.

Step 2

For the purposes of this assignment, you will answer the following questions in Managing Operations and Information:

1. What kinds of IT resources will your business require?

   Hint: Think about the employees in your business and what they will need in order to do their jobs. What computer hardware and software will they need? Will your business need a network and an internet connection? What type of network? Refer to Appendix B for a discussion on IT resources you may want to consider.

2. How will you use IT to keep track of your customers and potential customers?

   Hint: Many businesses—even small businesses—use databases to keep track of their customers. Will your business require a database? What about other information systems? Refer to Appendix B for more information on these topics.

3. What are the costs of doing business? Equipment, supplies, salaries, rent, utilities, and insurance are just some of these expenses. Estimate what it will cost to do business for one year.

   Hint: The Business Plan Student Template provides a table for you to insert the costs associated with doing business. Note that these are just estimates—just try your best to include accurate costs for the expenses you think will be a part of doing business.

4. How much will you charge for your product? How many products do you believe that you can sell in one year (or how many customers do you think your business can attract)? Multiply the price that you will charge by the number of products that you hope to sell or the amount you hope each customer will spend. This will give you an estimate of your *revenues* for one year.

   Hint: You will use the amounts you calculate in the costs and revenues questions in this part of the plan in the accounting statements in the next part, so be as realistic as you can.

5. Create a balance sheet and an income statement (profit-and-loss statement) for your business.

   Hint: You will have two options for creating these reports. The first option is to use the Microsoft Word versions that are found within the Business Plan Student Template itself. The second option is to use the specific Microsoft Excel templates created for each statement, which are found on the book's MyBusinessLab. These Excel files are handy to use because they already have the worksheet calculations preset—all you have to do is plug in the numbers and the calculations will be performed automatically for you. If you make adjustments to the different values in the Excel worksheets, you'll automatically see how changes to expenses, for example, can improve the bottom line.

6. Create a floor plan of the business. What does it look like when you walk through the door?

   Hint: When sketching your floor plan, consider where equipment, supplies, and furniture will be located.

7. Explain what types of raw materials and supplies you will need to run your business. How will you produce your good or service? What equipment do you need? What hours will you operate?

   Hint: Refer to the discussion of operations in Chapter 10 for information to get you started.

8. What steps will you take to ensure that the quality of the product or service stays at a high level? Who will be responsible for maintaining quality standards?

   Hint: Refer to the discussion of quality improvement and total quality management in Chapter 10 for information to get you started.

Note: Once you have answered the questions, save your Word document. You'll be answering additional questions in later chapters.

Tree Planters

At Touchwood Lake, Alberta, 36 rookie tree planters (as well as a group of veteran planters) meet Cal Dyck, who has contracts to plant 7 million white and black spruce seedlings in Alberta and Saskatchewan. The trees won't be ready for harvest for 90 years. The tree-planting industry was born in the 1970s when the idea of sustainable forestry caught on. Originally, convicts were used, but then the forestry companies found out that hippies were cheaper.

During a two-day orientation session, Cal gives the students a lot of information about tree planting. He knows most of them want to make a lot of money in a short period of time, and he tells them they can do that if they are highly motivated and committed to working hard (planters can burn up to 7000 calories per day). Students are paid between 10 and 25 cents per tree, depending on the terrain. For a $30-per-day charge, Cal will feed the workers and move them around to various planting sites. He also provides hot showers.

Among the rookies at the orientation are three friends: Misha (who is studying journalism at Concordia), Megan (a student at Emily Carr University in Vancouver), and Lianne (also a student at the Emily Carr University). They will soon learn about the frailty of the human body in the business of tree planting (blisters, tendonitis, twisted ankles, etc.). The orientation also includes all-important demonstrations about how to properly plant a seedling. Spacing the seedlings, planting them at the right depth, choosing the right type of soil, and having the seedlings at the right temperature are all important considerations. The rookies train as a group, but then they're on their own and can work at their own pace. Their work is constantly checked for quality. If planting is not done right, it must be redone.

The rookies plant for just four hours during their first day on the job. While rookies are learning how to plant, they may plant less than 100 trees a day, but an experienced veteran can plant 3000 trees in a day. These high-volume planters—called "pounders" because of their intense work ethic—can earn $15 000 during the summer season. They set high production goals for themselves and that motivates them to work hard.

For the rookies, the first week is already starting to blur. They eat, sleep, and plant. The work cycle is four days on and one day off. Within just a few weeks, some rookies are already starting to wonder why they are in the bush, especially on days when the rain is pouring down and they are soaked through. At Kananaskis, Alberta, work slows down because the terrain is rough and steep. It's only halfway through the season, but some planters already have bad cases of tendonitis from the repeated motion of jamming their shovel into the ground as they plant seedlings. Already 8 of the 36 rookies have quit.

Lianne has made $2500 so far, and she is one of the top rookie planters. By season's end, Lianne will have planted over 98 000 trees. Megan (Lianne's school buddy) is starting to waver. She is fighting a sinus infection and is not even making minimum wage. Misha has decided to quit. A friend of hers is getting married back east and she will not return after the wedding. A week later, Megan quits as well.

At Candle Lake, Saskatchewan, the planting crews are behind schedule as the season nears its end. They still have 1.2 million trees to plant, and the ranks of rookie planters are thinning fast. Only 14 of 36 rookies are still on the job. Smaller work crews mean more work for those who are left, and the opportunity to make more money. After more than three months in the bush, each rookie who is still on the job has planted thousands of trees. Lianne has learned to stop calculating her daily earnings. Brad, a veteran planter, says that he admires the rookies who have pulled through. He says that it's amazing that people can be brought into the bush from the city to do this kind of work.

Video Resource: "Tree Planters," *The National* (May 25, 2007).

Questions for Discussion

1. Explain what the terms "productivity" and "quality" mean. How are they related in the actual practice of tree planting?
2. Consider the following statement: *"The productivity and quality of rookie tree planters is very low, and the turnover rate is very high. Tree planting companies should therefore hire only experienced tree planters."* Do you agree or disagree with the statement? Defend your answer.
3. Why do you think tree planters are paid on a piece-rate basis? What are the advantages and disadvantages of paying tree planters this way? (Review the relevant material in Chapter 8 before answering this question.)
4. Explain the various forms of employee behaviour. How does each one of these forms of behaviour impact the productivity and quality of tree planters? (Review the relevant material in Chapter 9 before answering this question.)

African Accountants

In Canada's business jungle, all tracks lead to Bay Street, where lions of modern industry reign. Accountants keep Bay Street's books, but the heat is on to keep better books. Accountants don't like people who bring in shoeboxes full of receipts and then ask the accountant to organize them. Instead, accountants want the material organized before they try to do any calculations. But all this organizing costs money, and small- and mid-sized businesses don't usually have the money to pay for it.

For George Wall, of Wall & Associates, finding enough casual workers to do data organization and entry was a big challenge. He had to pay them up to $20 an hour, and that service was too pricey for many of his clients. But what if Wall could find workers who would do this work for one-tenth the hourly wage he had to pay people in Toronto? He found the solution by adopting global outsourcing. It works like this: When that shoebox arrives, each piece of paper is first fed into a high-speed scanner, then stored on a server, and then sent to the internet. While Bay Street sleeps, the material is sent to Kampala, Uganda, where the data are keyed in by African accountants who are paid only about $1 a day.

In a freshly painted office in Kampala, a dozen computers have just been taken out of their boxes, and a dozen workers have just been hired. Their boss is 20-something Abu Luaga, a Ugandan with a commerce degree who has the contract to do accounting work for Wall & Associates. He teaches the new hires what to do. His start-up funds came from his family, and he got involved with Wall & Associates through his connections with a Canadian business consultant.

There is much competition from other developing countries to get this kind of business. But his workers are keen, and they're already trained as bookkeepers. They're eager to see what the developed world has to offer, but many have never had a computer before and need training so that they can recognize various financial documents and learn Canadian accounting jargon. They're also being trained to think the way Canadian businesses do. As well, Luaga reminds them about deadlines and privacy. Because these workers are dealing with sensitive information, no cellphones are allowed in the office and the copying or saving of files or images is prohibited.

What are the implications of all this information flowing from the first world to the developing world and back again? It may be just the kind of miracle Uganda needs. The telecommunications industry has been a bright spot in the Ugandan economy, but Ugandans still make only about $1 a day. The country still relies on money earned by exporting coffee, and the government is dependent on foreign donors for part of its budget. Officials admit that the technical skills of workers aren't as good as those of people in some Asian countries, but this system allows educated Ugandans to work in their home country.

Luaga's workers say the work has already changed their career prospects. But not all Canadian clients have jumped at the chance to zip their documents to Africa. George Wall is convinced they will eventually be comfortable with the idea, and Luaga is banking on it. He's leasing bigger and better office space because he thinks that a new office and clients in Canada will impress other potential clients in Africa.

Video Resource: "African Accountants," *Venture* (February 16, 2003).

Questions for Discussion

1. What is the difference between financial and managerial accounting? Is the work that the African accountants are doing financial or managerial accounting? Explain.
2. Why might Canadian clients be reluctant to have Wall & Associates send their data to Africa for organizing? What can George Wall do to respond to their concerns?
3. Suppose that you read a newspaper editorial condemning the practice of sending documents to Africa on the grounds that this was yet another example of exporting Canadian jobs overseas to low-wage countries. How would you respond?