ALBRECHT, STICE, STICE, SKOUSEN

MANAGEMENT accounting

2 edition

MANAGEMENT ACCOUNTING

EDITION 2

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PART m3
Control 297

setting the stage

You've probably never heard of **E. I. DU PONT DE NEMOURS AND COMPANY**, but you may be familiar with its more common name, **DUPONT**. Some of this company's best-known brands are Teflon® resins, SilverStone® nonstick finish, Lycra® spandex fiber, Stainmaster® stain-resistant carpet, Kevlar® fiber, Corian® solid surface material, Mylar® polyester films, Tyvek® spunbonded olefin fabric, and Coolmax® and Cordura® textile fibers. With revenues of nearly $28 billion and net income of nearly $8 billion in 1999, DuPont ranked number 42 in the Fortune 500 list. DuPont operates in approximately 70 countries worldwide with roughly 135 manufacturing and processing facilities. Working in these facilities are 94,000 employees; nearly one-third of them work outside the United States. In addition to its manufacturing and processing facilities, DuPont has more than 40 research and development and customer service labs in the United States and more than 35 labs in 11 other countries. This is a big company! So what does this company have to do with you (other than that you probably use many of its products)? In 1903, the owners of DuPont created for themselves a challenge that no one had ever before attempted. The way they handled this challenge profoundly affected the way American companies are managed today and permanently changed our approach to management accounting. So, if you want to understand the importance of management accounting in America (as well as in many other countries around the world), you need to put yourself in the shoes of three cousins, Alfred, Coleman, and Pierre du Pont.

One of the oldest continuously operating industrial enterprises in the world, the DuPont company was established in 1802 near Wilmington, Delaware, by a French immigrant, Eleuthére Irénée du Pont de Nemours, to produce black powder. Essentially, E. I. du Pont built a product that ignited when it was supposed to. Public enthusiasm for du Pont's product continued, and the company grew into a major family corporation. The start of the twentieth century brought increased competition from other companies, however, and DuPont fell on hard times. Seizing the opportunity created by the crisis, three of E. I. du Pont's great-grandsons, Alfred I. du Pont, Thomas Coleman du Pont, and Pierre Samuel du Pont, offered to purchase the firm's assets from the family in exchange for bonds and stock in a new corporation (a transaction known today as a leveraged buyout). The offer was accepted. In 1902, the company was restructured to look for new business and create new products through research and development.

Alfred, Coleman, and Pierre had some pretty innovative ideas about running a business. In 1903, the gunpowder industry looked much like any other industry in America. All of DuPont's competitors in the industry focused primarily on manufacturing. They purchased raw materials (such as charcoal, sodium nitrate, and crude glycerin) from suppliers and distributed their gunpowder products to customers using independent wholesalers and general merchants. For the du Pont cousins, the business they purchased looked a lot like the left side of Exhibit 1-1. After the purchase, they decided to expand the business beyond the manufacturing of high explosives, smokeless gunpowder, and black blasting powder. The DuPonts started "forward integrating" into the distribution business by creating their own network of branch sales offices scattered across the United States. They also "backward integrated" by buying out many (but not all) of their suppliers. When the dust finally settled, DuPont was America's first large-scale "vertically integrated" company (the right side of Exhibit 1-1). Most of the profits usually earned by outside companies (either selling DuPont products to customers or selling raw materials to DuPont) were now consolidated within DuPont. This type of organization is quite common today, but it was a strange-looking company at the turn of the twentieth century. Although Alfred, Coleman, and Pierre were confident that their new way of doing business was going to make them a lot of money (they were right!), they had created a serious challenge for themselves. They knew how to run a manufacturing business, but now they were in the purchasing and sales business as well. These were three very different businesses, each with its own way of communicating results and measuring success. The three cousins had a limited amount of time and resources to invest in developing their company. How were they going to be able to effectively plan schedules, control operations, and evaluate each division to determine additional investment needs?

Introduction to Management Accounting

chapter

m1

learning objectives

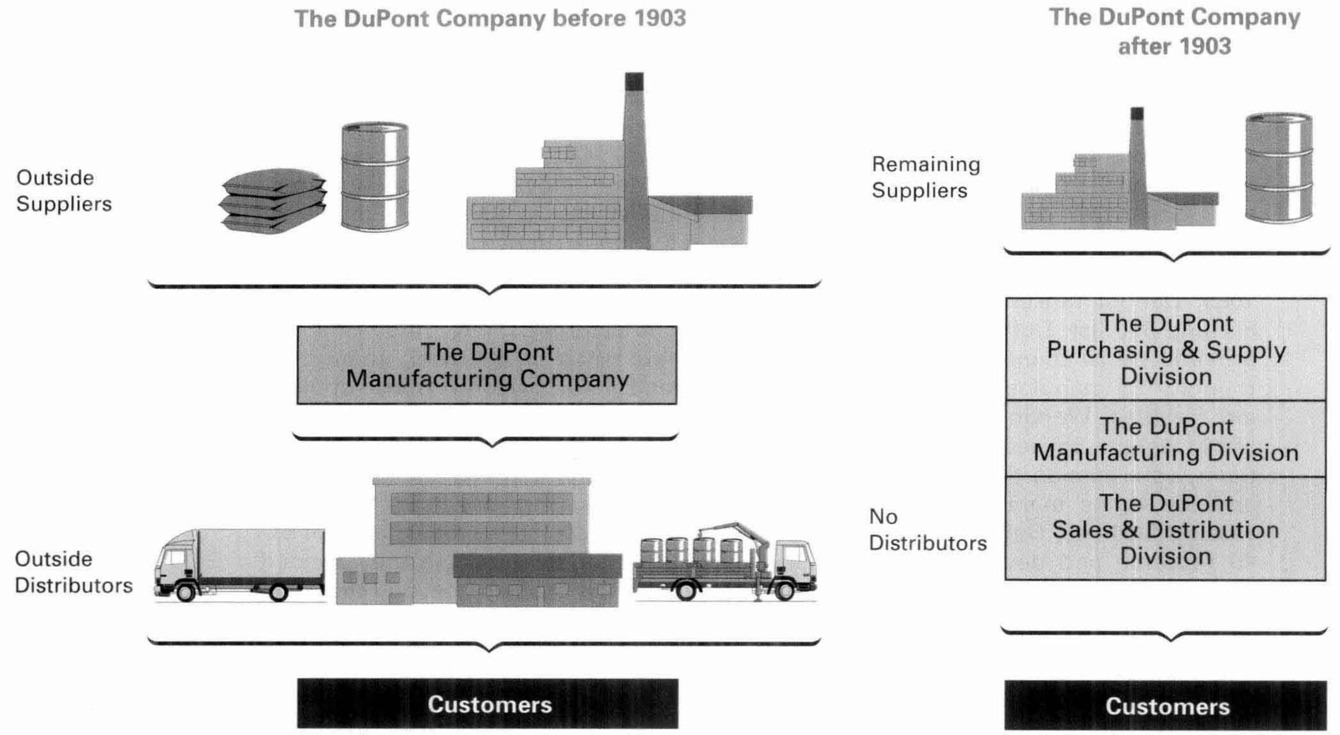
After studying this chapter, you should be able to:

1. Understand the essential differences between management accounting and financial accounting, as illustrated by managerial use of the ROI formula.
2. Understand that successfully managing a company requires good information that supports effective planning, controlling, and evaluating processes.
3. Know how the concepts of fixed and variable costs are used in C-V-P analysis in the management planning process.
4. Realize how the product cost classifications of direct materials, direct labor, and overhead are used in the management controlling process.
5. Be able to perform a simple segment analysis using the concepts of direct, indirect, and opportunity costs in the management evaluating process.
6. Understand that management accounting still continues to evolve.

part m1

Foundations

exhibit 1-1 A Comparative Look at the DuPont Company before and after 1903



Essentially, Alfred, Coleman, and Pierre had an accounting problem. What would you have done if you were in their shoes in 1903? What the cousins did to handle the challenge was, to say the least, impressive.[1]

This chapter introduces management accounting and distinguishes it from financial accounting. We will use DuPont to introduce key management accounting concepts such as ROI. It is important to understand that the purpose of management accounting is to fulfill a competitive need. DuPont had a competitive need to manage a very large and diverse organization and so established ROI as an important management device. Accounting tools such as ROI are used to support the management process of planning, controlling, and evaluating. Every business organization uses a variety of accounting tools to support these important management processes. In this chapter we will use cost-volume-profit (C-V-P) analysis to introduce the planning process, product cost classifications to introduce the controlling process, and segment analysis to introduce the evaluating process. In working through a brief overview of these tools, you will be introduced to a variety of cost accounting terms. However, you also need to be aware that effective management in modern organizations requires management accountants to provide not only cost data, but also quality- and time-based information as well. Hence, this chapter has three purposes.

1. *To distinguish management accounting from financial accounting.*
2. *To outline the management process of planning, controlling, and evaluating, as well as the strategic issues of cost, quality, and time.*
3. *To introduce management accounting terminologies in the context of several key management tools.*

1 Historical sources: A. D. Chandler, *The Invisible Hand* (Boston: HBS Press, 1977); H. T. Johnson and R. S. Kaplan, *Relevance Lost* (Boston: HBS Press, 1987); the DuPont home page at http://www.dupont.com/corp/gbl-company/history.html; Microsoft Encarta 1994.

1

Understand the essential differences between management accounting and financial accounting, as illustrated by managerial use of the ROI formula.

MANAGEMENT ACCOUNTING VERSUS FINANCIAL ACCOUNTING

Knowing a little of the history of management accounting is very useful in understanding the differences between management accounting and financial accounting. Frankly, a lot of professionals have a difficult time separating the purposes of management accounting and financial accounting. Overall, the purpose of financial accounting, as determined by several regulatory groups, is to establish an objective and consistent format for all companies to use in reporting financial results to the public. In contrast, management accounting is established by individual companies that want to create proprietary information for internal use that has competitive value. The "rules" of management accounting are not governed by anything other than market forces.

The Return on Investment (ROI) Technique

By the time Alfred, Coleman, and Pierre du Pont had finished buying out suppliers and establishing sales offices throughout the country, they had created a giant organization. The fact that their company was big, however, is not what makes their situation interesting. Francis Cabot Lowell, Edward Henry Harriman, Andrew Carnegie, and Rowland H. Macy each had already created and successfully managed huge companies. Their companies, however, all focused on doing *one thing well*—making cloth, moving railway cars, producing steel, or selling goods. The du Ponts, on the other hand, were trying to combine within one company many different types of businesses: wholesale purchasing, raw materials and finished goods manufacturing, and retail distribution. They had a huge management hierarchy, complicated production processes, geographically dispersed business locations, and inventory that needed to turn over rapidly. Each of these divisions required constant attention and additional capital investments in order to grow and flourish. The du Ponts knew they could make or lose money in any part of this monstrous new company. Obviously, neither they nor their capital resources could be everywhere at once. They needed to make trade-off decisions. The problem was, with very diverse divisions, how could they decide which divisions should receive additional investments of time and money? They couldn't really compare the cost reports of retail stores in Denver with a black powder manufacturing factory in Delaware or with a sodium nitrate processing plant in Chile. Having all these unique business activities also made it quite difficult to relate various measures of efficiency directly to overall company profit. The first thing the new DUPONT management team did was develop extensive budgets to coordinate the flow of resources from raw materials to the final customer. But they still needed a measure for comparing performance in the firm's separate divisions with performance of the whole company. Enter the accountant. (Actually, he was an electrical engineer turned accountant. Nevertheless, if a management accountant hall of fame existed, the bust of F. Donaldson Brown would grace its entrance!)

It's
1:00pm

Donaldson Brown, along with other executives at DuPont, realized that every division required an investment in capital (assets) in order to be in business. The overall goal of every business should be to effectively use its assets to make a profit. For example, an explosives plant earning \$50,000 in profit with required capital investments of \$1 million would not be performing as well as a major distributing division earning an equal \$50,000 in profit with only \$500,000 in required capital assets. If you had \$1 million to invest, which division would receive your money? The distributing division is earning a 10% return (\$50,000 ÷ \$500,000) on the DuPont investment in inventory, equipment, and buildings. The explosives plant is earning only a 5% return on investment. Although this simple formula was not really new to American business in the first part of the twentieth century, Brown took the idea of **return on investment (ROI)** and turned it into a management technique that could be used to manage any kind of business operation at DuPont. Exhibit 1-2 illustrates how the DuPont ROI formula could be expanded into a comprehensive measurement system for performance. Study this exhibit for a moment. If any company division (or the company as a whole) is generating low ROI, the DuPont management team can immediately begin analyzing the problem. Is **asset turnover** too low? Perhaps the division needs to reduce its investment in assets or work to improve sales. Is the **profit margin** less than adequate? Maybe the division needs to concentrate on reducing selling expenses or manufacturing costs. The ROI tool allowed the du Pont cousins to be hugely successful in managing the country's first integrated

return on investment (ROI) A measure of operating performance and efficiency in utilizing assets; computed in its simplest form by dividing net income by average total assets.

asset turnover An overall measure of how effectively assets are used during a period; computed by dividing revenue by total assets.

profit margin An overall measure of the profitability of operations during a period; computed by dividing profit by revenue.

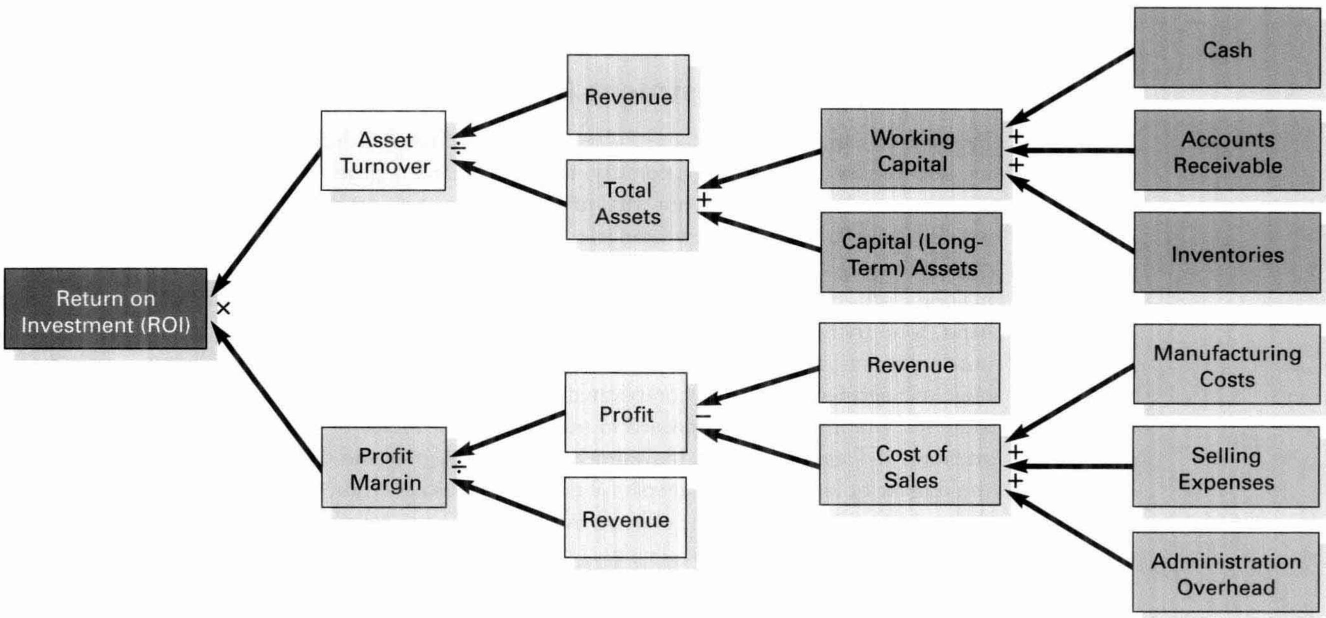
exhibit 1-2 An Illustration of the DuPont ROI Formula (simple and complex)

The DuPont ROI Formula (simple)

$$\text{Return on Investment (ROI)} = \frac{\text{Profit}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Assets}}$$

Note: Later development of the DuPont formula expanded the model to include a measure of leverage (Assets/Equity). The effect of this modification is to create a return on equity (ROE) instead of ROI.

The DuPont ROI Formula (complex)*



***Source**: T. C. Davis, "How the DuPont Organization Appraises Its Performance," in AMA *Financial Management Series No. 94* (New York: American Management Association, 1950), p. 7. Reprinted in Johnson and Kaplan, *Relevance Lost* (Boston: HBS Press, 1987), p. 85.

company by combining cost management with asset management and raising it to an art form! It's likely that no management accounting technique has had as great an impact on business management as the DuPont ROI formula. In fact, Donaldson Brown took the ROI approach with him when he followed Pierre du Pont to help rescue a little company in the midst of an inventory crisis in 1920. The name of the company was GENERAL MOTORS. The success of the DuPont technique at General Motors can be seen today in any parking lot in America.

Management Accounting and Financial Accounting

In addition to introducing the ROI formula, the DuPont story is an example of how management accounting evolves within organizations that have a particular need for good information. This development pattern has been playing out across companies for a long time. Since the first days of the Industrial Revolution, business owners and managers have generally adopted the best accounting ideas available from other companies and then created their own new accounting system that provided a competitive edge in terms of good management information. Over time, management accounting has, quite literally, evolved within and migrated between organizations and industries in the process of satisfying individual information needs in a competitive world. In fact, a company often regards a good management accounting system as *highly proprietary*—and rarely discloses its details to the public.

Conversely, primarily as a result of the Stock Market Crash of 1929, financial accounting has effectively developed in the United States to provide a *common reporting platform* to the public. In the rapidly rising stock market of the 1920s, many companies publicly issued shares for

caution

Don't think management accounting is not important just because it is not defined as precisely as financial accounting. As you study the story of ROI at DuPont, you will see that management accounting is critical to the success of businesses throughout the world.

the first time. These share issues were often accompanied by little or no financial disclosure. Thus, many stock traders were buying and selling shares based mainly on rumor, speculation, and deceit. In the aftermath of the crash, Congress established the Securities and Exchange Commission (SEC) to regulate the issuance and trading of securities in the United States. In addition to monitoring insider trading and stockbroker behavior, the SEC also ensures that companies issuing securities for purchase by U.S. investors provide full and fair disclosure of their financial status through the public release of financial statements prepared using a set of generally accepted accounting practices (GAAP). The SEC has the legal authority to prescribe accepted accounting standards, but has generally allowed the accounting profession in the United States to establish those rules. Currently, the Financial Accounting Standards Board (FASB), a nongovernmental body supported by the business community and the accounting profession, is the acknowledged source of authoritative accounting standards in the United States.

The important thing to remember is that the purpose of financial accounting, as defined by GAAP, is to comply with requests of outside investors, creditors, and regulators for fair and consistent reports of operations. Accordingly, all companies are required to apply the same general financial accounting rules so that outsiders can compare financial reports coming from many different companies. In contrast, no government regulator or auditor is going to insist that a company implement a good management accounting system; the choice of how to collect and use information within a company is part of a company's competitive strategy. For example, no one forced the du Pont cousins to use the ROI formula to better manage their business; however, because the ROI evaluation framework worked well for DuPont, it was subsequently mimicked by many (but not all) of DuPont's competitors. Remember, the only reason a company does management accounting is to satisfy a competitive need, and competitive need often dictates that one organization's management accounting system will not look like another's!

STOP & THINK We have described some differences in financial and management accounting. Why is it important for an accounting system to provide both types of accounting information?

to summarize

Among the successful innovators in management accounting were Donaldson Brown and the du Ponts who, at the beginning of the twentieth century, consolidated the previous work of others into the famous DuPont ROI management accounting model. The ROI story is typical of management accounting, which is the product of many years of business owners and managers experimenting with methods for capturing and using information about their organization that would give them a unique competitive edge. Organizations and managers are motivated to be innovative in developing and effective in deploying these new accounting tools by the need to compete in a growing economy. In contrast, financial accounting rules are established by an authoritative body in order to enhance company-to-company comparability of financial accounting reports.

2

Understand that successfully managing a company requires good information that supports effective planning, controlling, and evaluating processes.

THE MANAGEMENT PROCESS AND MANAGEMENT ACCOUNTING TERMINOLOGY

Critical to the success experienced by great companies like **DUPONT** is intelligent decision making by individuals supported by competitive management accounting information. Managers will always need to make choices. What should be produced? What should be sold? How should the service be delivered? What does this client need? Which supplier should be used? Who should be promoted? How should financing be obtained? Exhibit 1-3 illustrates the central role that decision making plays in the general management process.

Notice that the decision-making circle intersects three other circles, each representing a major management function. This intersection is meant to show that each of these functions re-