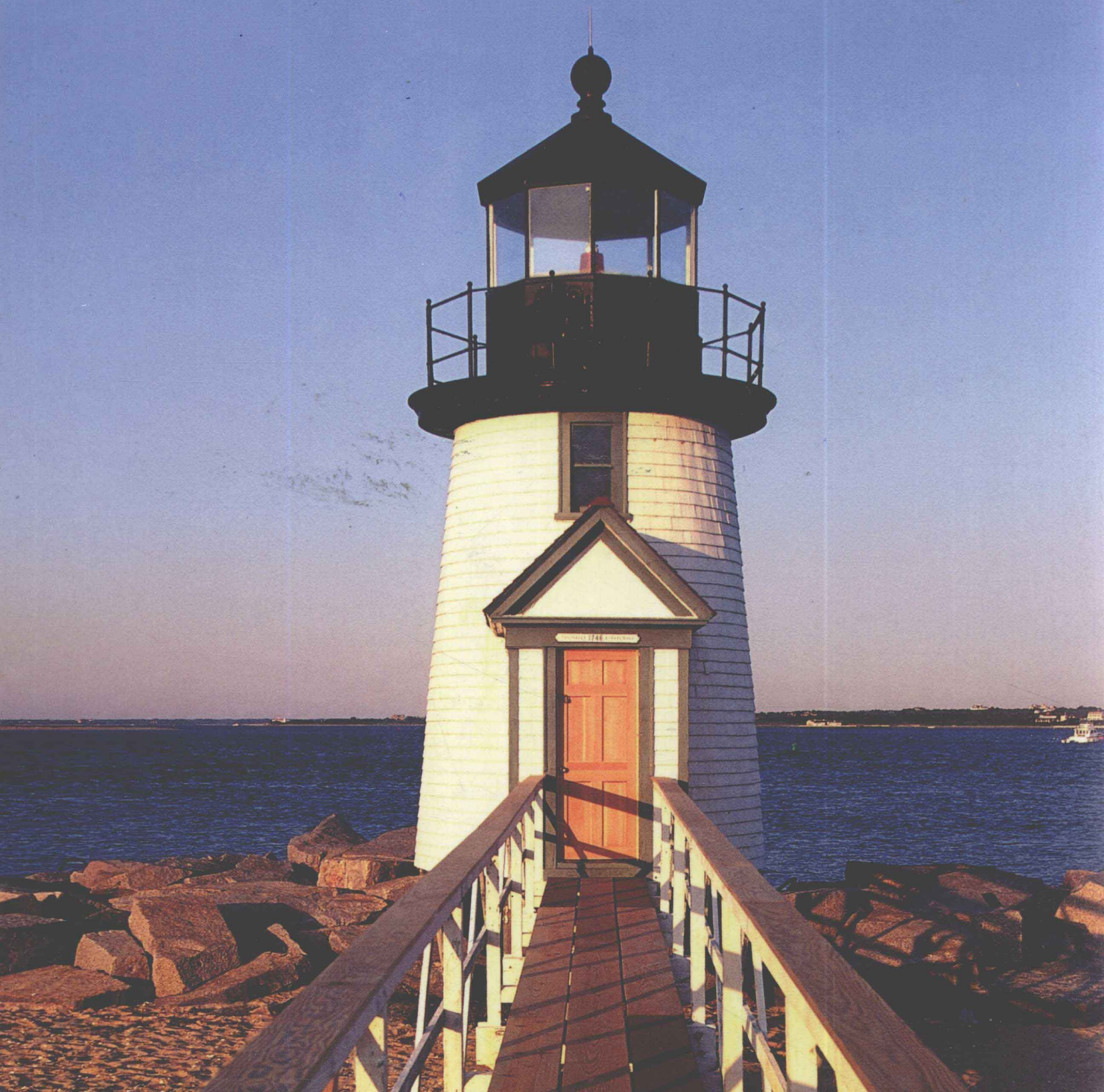


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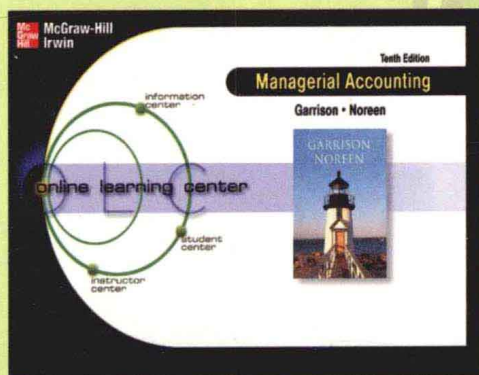
Chapter 5: Cost Behavior: Analysis and Use
Concept 1: Fixed, Variable and Mixed Costs

Match the graphical representation of a cost with the appropriate term by clicking on the related button. (Assume that the vertical or y axis represents total cost and the horizontal or x axis represents the activity being measured.)

Graphical Representation	Total Variable Cost	Total Fixed Cost	Total Mixed Cost
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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Managerial Accounting

Tenth Edition

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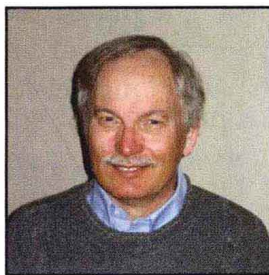
To our families and
to our many colleagues who use this book.

About the Authors



Ray H. Garrison is emeritus Professor of Accounting at Brigham Young University, Provo, Utah. He received his B.S. and M.S. degrees from Brigham Young University and his D.B.A. degree from Indiana University.

As a certified public accountant, Professor Garrison has been involved in management consulting work with both national and regional accounting firms. He has published articles in *The Accounting Review*, *Management Accounting*, and other professional journals. Innovation in the classroom has earned Professor Garrison the Karl G. Maeser Distinguished Teaching Award from Brigham Young University.



Eric W. Noreen is a globe-trotting academic who has held appointments at institutions in the United States, Europe, and Asia. He is Professor Emeritus of Accounting at the University of Washington and was Visiting Price Waterhouse Professor of Management Information & Control at INSEAD, an international graduate school of business located in France.

He received his B.A. degree from the University of Washington and MBA and Ph.D. degrees from Stanford University. A certified management accountant, he was awarded a Certificate of Distinguished Performance by the Institute of Certified Management Accountants.

Professor Noreen has served as Associate Editor of *The Accounting Review* and the *Journal of Accounting* and *Economics*. He has published numerous articles in academic journals including: the *Journal of Accounting Research*; the *Accounting Review*; the *Journal of Accounting and Economics*; *Accounting Horizons*; *Accounting, Organizations and Society*; *Contemporary Accounting Research*; the *Journal of Management Accounting Research*; and the *Review of Accounting Studies*. He is a frequent presenter at workshops and conferences throughout the world.

Professor Noreen has taught management accounting at the undergraduate, master's, and doctoral levels and has won a number of awards from students for his teaching.

Your guide through

For centuries,

the lighthouse has acted as a beacon of guidance for mariners at sea. More than an aid to navigation, the lighthouse symbolizes safety, permanence, reliability, and the comforts of the familiar.

For this reason, we have chosen to decorate the tenth edition of our “flagship” accounting publication, **Managerial Accounting** by Garrison and Noreen, with an image that we feel encapsulates the greatest strengths of this market-leading text.

Garrison is your guide through the challenging waters of managerial accounting. It identifies the three functions managers must perform within their organizations—plan operations, control activities, and make decisions—and explains what accounting information is necessary for these functions, how to collect it, and how to interpret it. To achieve this, **Managerial Accounting 10/E** focuses, now as in the past, on three qualities:





Making Fact-Based Decisions in Real Time

Cisco Systems and Alcoa are on the leading edge of their industries and real-time management accounting is one of the keys to their success. Managers at these companies can drill down into the company's management accounting system to find the latest data on revenues, margins, order backlogs, expenses, and other data, by region, by business unit, by distribution channel, by salesperson, and so on. The Chief Financial Officer of Cisco, Larry Carter, says that with this kind of live information "you can empower all your management team to improve decision making." Richard Kelson, the Chief Financial Officer of Alcoa, says: "The earlier you get information, the easier it is to fix a problem." For example, with up-to-date data, managers at Alcoa saw softness in aerospace markets early enough to shift production from hard alloys that are used in aircraft to other products. John Chambers, the CEO of Cisco, says: "At any time in the quarter, first-line managers can look at margins and products and know exactly what the effect of their decisions will be."

Source: Thomas A. Stewart, "Making Decisions in Real Time," *Fortune*, June 26, 2000, pp. 332-333.

BUSINESS FOCUS

Managerial accounting is concerned with providing information to managers—that is, people *inside* an organization who direct and control its operations. In contrast, **financial accounting** is concerned with providing information to stockholders, creditors, and others who are *outside* an organization. Managerial accounting provides the essential data with which organizations are actually run. Financial accounting provides the scorecard by which a company's overall past performance is judged by outsiders.

Managerial accountants prepare a variety of reports. Some reports focus on how well managers or business units have performed—comparing actual results to plans and to benchmarks. Some reports provide timely, frequent updates on key indicators such as orders received, order backlog, capacity utilization, and sales. Other analytical reports are prepared as needed to investigate specific problems such as a decline in the profitability of a product line. And yet other reports analyze a developing business situation or opportunity. In contrast, financial accounting is oriented toward producing a limited set of specific prescribed annual and quarterly financial statements in accordance with generally accepted accounting principles.

Because it is manager oriented, any study of managerial accounting must be preceded by some understanding of what managers do, the information managers need, and the general business environment. Accordingly, the purpose of this chapter is to briefly examine these subjects.

The Work of Management and the Need for Managerial Accounting Information

Every organization—large and small—has managers. Someone must be responsible for making plans, organizing resources, directing personnel, and controlling operations. This is true of the **Bank of America**, the **Peace Corps**, the **University of Illinois**, the **Catholic Church**, and the **Coca-Cola Corporation**, as well as the local **7-Eleven** convenience store. In this chapter, we will use a particular organization—Good Vibrations, Inc.—to illustrate the work of management. What we have to say about the management of Good Vibrations, Inc., however, is very general and can be applied to virtually any organization.

Good Vibrations, Inc., runs a chain of retail outlets that sell a full range of music CDs. The chain's stores are concentrated in Pacific Rim cities such as Sydney, Singapore, Hong Kong, Beijing, Tokyo, and Vancouver, British Columbia. The company has found that the best way to generate sales, and profits, is to create an exciting shopping environment. Consequently, the company puts a great deal of effort into planning the layout and decor of its stores—which are often quite large and extend over several floors in key downtown locations. Management knows that different types of clientele are attracted to different kinds of music. The international rock section is generally decorated with bold, brightly colored graphics, and the aisles are purposely narrow to create a crowded feeling much like one would experience at a popular nightclub on Friday night. In contrast, the classical music section is wood-paneled and fully sound insulated, with the rich, spacious feeling of a country club meeting room.

Managers at Good Vibrations, Inc., like managers everywhere, carry out three major activities—*planning*, *directing* and *motivating*, and *controlling*. **Planning** involves selecting a course of action and specifying how the action will be implemented. **Directing and motivating** involves mobilizing people to carry out plans and run routine operations. **Controlling** involves ensuring that the plan is actually carried out and is appropriately modified as circumstances change. Management accounting information plays a vital role in these basic management activities—but most particularly in the planning and control functions.



Planning

The first step in planning is to identify alternatives and then to select from among the alternatives the one that does the best job of furthering the organization's objectives. The basic objective of Good Vibrations, Inc., is to earn profits for the owners of the company by providing superior service at competitive prices in as many markets as possible. To further this objective, every year top management carefully considers a range of options, or alternatives, for expanding into new geographic markets. This year management is considering opening new stores in Shanghai, Los Angeles, and Auckland.

When making this and other choices, management must balance the opportunities against the demands made on the company's resources. Management knows from bitter experience that opening a store in a major new market is a big step that cannot be taken lightly. It requires enormous amounts of time and energy from the company's most experienced, talented, and busy professionals. When the company attempted to open stores in both Beijing and Vancouver in the same year, resources were stretched too thinly. The result was that neither store opened on schedule, and operations in the rest of the company suffered. Therefore, entering new markets is planned very, very carefully.

Among other data, top management looks at the sales volumes, profit margins, and costs of the company's established stores in similar markets. These data, supplied by the management accountant, are combined with projected sales volume data at the proposed new locations to estimate the profits that would be generated by the new stores. In general, virtually all important alternatives considered by management in the planning process have some effect on revenues or costs, and management accounting data are essential in estimating those effects.

After considering all of the alternatives, Good Vibrations, Inc.'s top management decided to open a store in the burgeoning Shanghai market in the third quarter of the year, but to defer opening any other new stores to another year. As soon as this decision was made, detailed plans were drawn up for all parts of the company that would be involved in the Shanghai opening. For example, the Personnel Department's travel budget was increased, since it would be providing extensive on-site training to the new personnel hired in Shanghai.

As in the Personnel Department example, the plans of management are often expressed formally in **budgets**, and the term *budgeting* is applied to generally describe this part of the planning process. Budgets are usually prepared under the direction of the **controller**, who is the manager in charge of the Accounting Department. Typically, budgets are prepared annually and represent management's plans in specific, quantitative terms. In addition to a travel budget, the Personnel Department will be given goals in terms of new hires, courses taught, and detailed breakdowns of expected expenses. Similarly, the manager of each store will be given a target for sales volume, profit, expenses, pilferage losses, and employee training. These data will be collected, analyzed, and summarized for management use in the form of budgets prepared by management accountants.

Directing and Motivating

In addition to planning for the future, managers must oversee day-to-day activities and keep the organization functioning smoothly. This requires the ability to motivate and effectively direct people. Managers assign tasks to employees, arbitrate disputes, answer questions, solve on-the-spot problems, and make many small decisions that affect customers and employees. In effect, directing is that part of the managers' work that deals with the routine and the here and now. Managerial accounting data, such as daily sales reports, are often used in this type of day-to-day decision making.

Controlling

In carrying out the **control** function, managers seek to ensure that the plan is being followed. **Feedback**, which signals whether operations are on track, is the key to effective control. In sophisticated organizations, this feedback is provided by detailed reports of

various types. One of these reports, which compares budgeted to actual results, is called a **performance report**. Performance reports suggest where operations are not proceeding as planned and where some parts of the organization may require additional attention. For example, before the opening of the new Shanghai store in the third quarter of the year, the store's manager will be given sales volume, profit, and expense targets for the fourth quarter of the year. As the fourth quarter progresses, periodic reports will be made in which the actual sales volume, profit, and expenses are compared to the targets. If the actual results fall below the targets, top management is alerted that the Shanghai store requires more attention. Experienced personnel can be flown in to help the new manager, or top management may come to the conclusion that plans will have to be revised. As we shall see in following chapters, providing this kind of feedback to managers is one of the central purposes of managerial accounting.

The End Results of Managers' Activities

As a customer enters one of the Good Vibrations stores, the results of management's planning, directing and motivating, and controlling activities will be evident in the many details that make the difference between a pleasant and an irritating shopping experience. The store will be clean, fashionably decorated, and logically laid out. Featured artists' videos will be displayed on TV monitors throughout the store, and the background rock music will be loud enough to send older patrons scurrying for the classical music section. Popular CDs will be in stock, and the latest hits will be available for private listening on earphones. Specific titles will be easy to find. Regional music, such as CantoPop in Hong Kong, will be prominently featured. Checkout clerks will be alert, friendly, and efficient. In short, what the customer experiences doesn't simply happen; it is the result of the efforts of managers who must visualize and fit together the processes that are needed to get the job done.

The Planning and Control Cycle

The work of management can be summarized in a model such as the one shown in Exhibit 1-1. The model, which depicts the **planning and control cycle**, illustrates the smooth flow of management activities from planning through directing and motivating, controlling, and then back to planning again. All of these activities involve decision making, so it is depicted as the hub around which the other activities revolve.

Comparison of Financial and Managerial Accounting

LEARNING OBJECTIVE 1

Identify the major differences and similarities between financial and managerial accounting.

Financial accounting reports are prepared for the use of external parties such as shareholders and creditors, whereas managerial accounting reports are prepared for managers inside the organization. This contrast in basic orientation results in a number of major differences between financial and managerial accounting, even though both financial and managerial accounting often rely on the same underlying financial data. These differences are summarized in Exhibit 1-2.

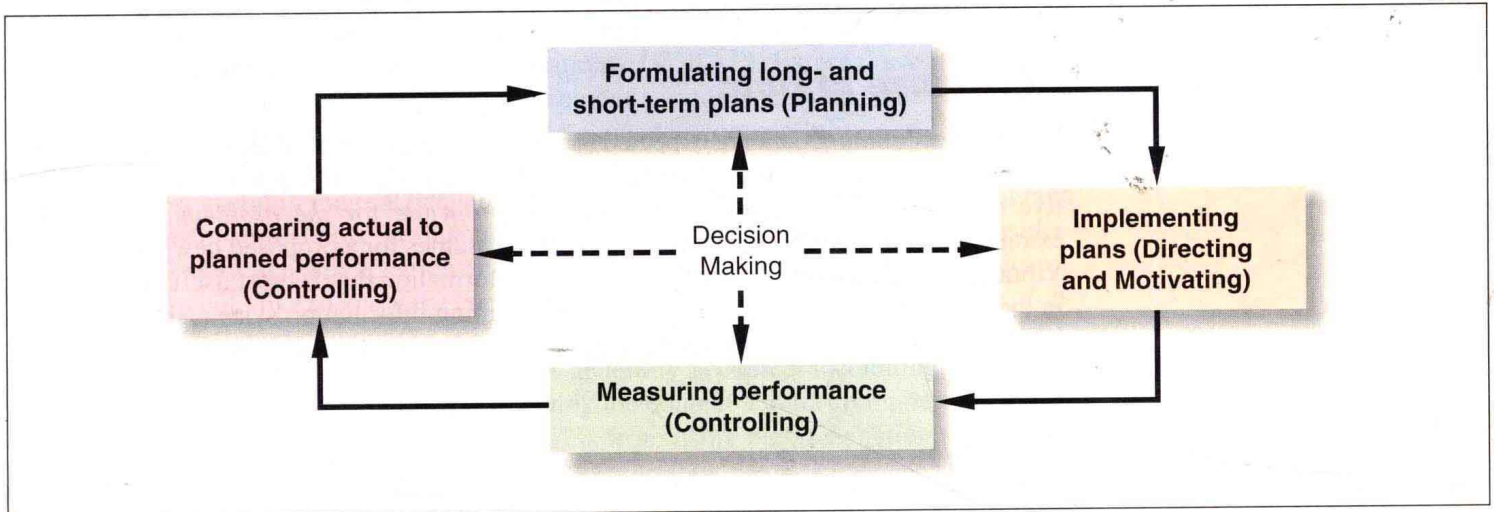
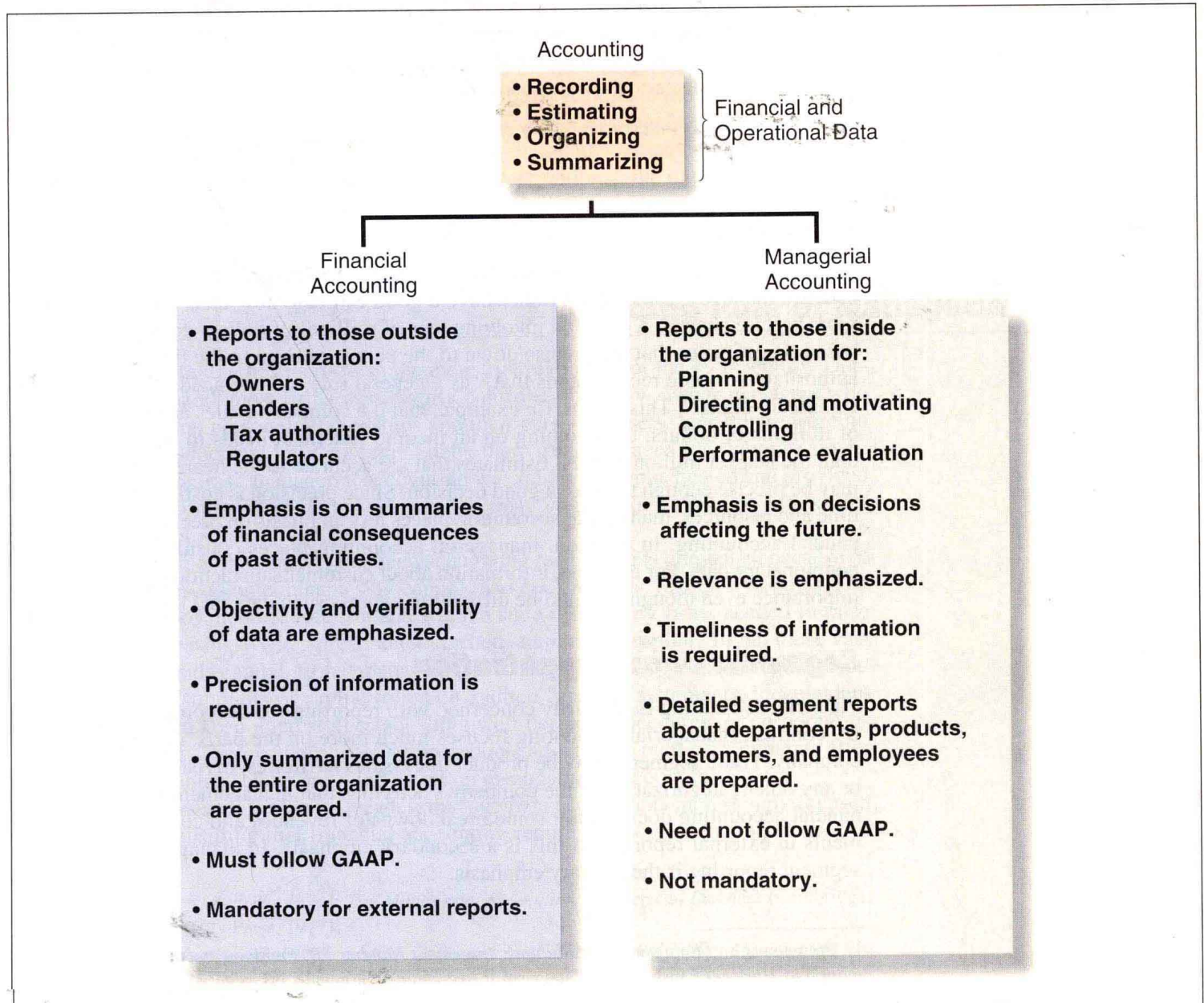
As shown in Exhibit 1-2, in addition to the difference in who the reports are prepared for, financial and managerial accounting also differ in their emphasis between the past and the future, in the type of data provided to users, and in several other ways. These differences are discussed in the following paragraphs.

Emphasis on the Future

Since *planning* is such an important part of the manager's job, managerial accounting has a strong future orientation. In contrast, financial accounting primarily provides summaries of past financial transactions. These summaries may be useful in planning, but only to a point. The future is not simply a reflection of what has happened in the past. Changes are constantly taking place in economic conditions, customer needs and desires, competitive conditions, and so on. All of these changes demand that the manager's planning be based



Concept 1-1

Exhibit 1-1 The Planning and Control Cycle**Exhibit 1-2** Comparison of Financial and Managerial Accounting

in large part on estimates of what will happen rather than on summaries of what has already happened.

Relevance of Data

Financial accounting data are expected to be objective and verifiable. However, for internal uses the manager wants information that is relevant even if it is not completely objective or verifiable. By relevant, we mean *appropriate for the problem at hand*. For example, it is difficult to verify estimated sales volumes for a proposed new store at Good Vibrations, Inc., but this is exactly the type of information that is most useful to managers in their decision making. The managerial accounting information system should be flexible enough to provide whatever data are relevant for a particular decision.

In Business

What Number Did You Have in Mind?

Caterpillar has long been at the forefront of management accounting practice. When asked by a manager for the cost of something, accountants at Caterpillar have been trained to ask “What are you going to use the cost for?” One management accountant at Caterpillar explains: “We want to make sure the information is formatted and the right elements are included. Do you need a variable cost, do you need a fully burdened cost, do you need overhead applied, are you just talking about discretionary cost? The cost that they really need depends on the decision they are making.”

Source: Gary Siegel, “Practice Analysis: Adding Value,” *Strategic Finance*, November 2000, pp. 89–90.

Less Emphasis on Precision

Timeliness is often more important than precision to managers. If a decision must be made, a manager would much rather have a good estimate now than wait a week for a more precise answer. A decision involving tens of millions of dollars does not have to be based on estimates that are precise down to the penny, or even to the dollar. In fact, one authoritative source recommends that, “as a general rule, no one needs more than three significant digits.”¹ This means, for example, that if a company’s sales are in the hundreds of millions of dollars, then nothing on an income statement needs to be more accurate than the nearest million dollars. Estimates that are accurate to the nearest million dollars may be precise enough to make a good decision. Since precision is costly in terms of both time and resources, managerial accounting places less emphasis on precision than does financial accounting. In addition, managerial accounting places considerable weight on nonmonetary data. For example, information about customer satisfaction is of tremendous importance even though it would be difficult to express such data in a monetary form.

Segments of an Organization

Financial accounting is primarily concerned with reporting for the company as a whole. By contrast, managerial accounting focuses much more on the parts, or **segments**, of a company. These segments may be product lines, sales territories, divisions, departments, or any other categorization of the company’s activities that management finds useful. Financial accounting does require some breakdowns of revenues and costs by major segments in external reports, but this is a secondary emphasis. In managerial accounting, segment reporting is the primary emphasis.

¹ *Statements on Management Accounting, Statement Number 5B, Fundamentals of Reporting Information to Managers*, Institute of Management Accounting, Montvale, NJ, p. 6.

Generally Accepted Accounting Principles (GAAP)

Financial accounting statements prepared for external users must be prepared in accordance with generally accepted accounting principles (GAAP). External users must have some assurance that the reports have been prepared in accordance with some common set of ground rules. These common ground rules enhance comparability and help reduce fraud and misrepresentation, but they do not necessarily lead to the type of reports that would be most useful in internal decision making. For example, GAAP requires that land be stated at its historical cost on financial reports. However, if management is considering moving a store to a new location and then selling the land the store currently sits on, management would like to know the current market value of the land—a vital piece of information that is ignored under GAAP.

Managerial accounting is not bound by generally accepted accounting principles. Managers set their own ground rules concerning the content and form of internal reports. The only constraint is that the expected benefits from using the information should outweigh the costs of collecting, analyzing, and summarizing the data. Nevertheless, as we shall see in subsequent chapters, it is undeniably true that financial reporting requirements have heavily influenced management accounting practice.

Managerial Accounting—Not Mandatory

Financial accounting is mandatory; that is, it must be done. Various outside parties such as the Securities and Exchange Commission (SEC) and the tax authorities require periodic financial statements. Managerial accounting, on the other hand, is not mandatory. A company is completely free to do as much or as little as it wishes. No regulatory bodies or other outside agencies specify what is to be done, or, for that matter, whether anything is to be done at all. Since managerial accounting is completely optional, the important question is always, “Is the information useful?” rather than, “Is the information required?”

Expanding Role of Managerial Accounting

Managerial accounting has its roots in the industrial revolution of the 19th century. During this early period, most firms were tightly controlled by a few owner-managers who borrowed based on personal relationships and their personal assets. Since there were no external shareholders and little unsecured debt, there was little need for elaborate financial reports. In contrast, managerial accounting was relatively sophisticated and provided the essential information needed to manage the early large-scale production of textiles, steel, and other products.²

After the turn of the century, financial accounting requirements burgeoned because of new pressures placed on companies by capital markets, creditors, regulatory bodies, and federal taxation of income. Johnson and Kaplan state that “many firms needed to raise funds from increasingly widespread and detached suppliers of capital. To tap these vast reservoirs of outside capital, firms’ managers had to supply audited financial reports. And because outside suppliers of capital relied on audited financial statements, independent accountants had a keen interest in establishing well-defined procedures for corporate financial reporting. The inventory costing procedures adopted by public accountants after the turn of the century had a profound effect on management accounting.”³

As a consequence, for many decades, management accountants increasingly focused their efforts on ensuring that financial accounting requirements were met and financial

A. D. Chandler, *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Harvard University Press, 1977).

H. Thomas Johnson and Robert S. Kaplan, *Relevance Lost: The Rise and Fall of Management Accounting* (Boston, MA: Harvard Business School Press, 1987), pp. 129–130.

reports were released on time. The practice of management accounting stagnated. In the early part of the century, as product lines expanded and operations became more complex, forward-looking companies such as **Du Pont**, **General Motors**, and **General Electric** saw a renewed need for management-oriented reports that was separate from financial reports.⁴ But in most companies, management accounting practices up through the mid-1980s were largely indistinguishable from practices that were common prior to World War I. In recent years, however, new economic forces have led to many important innovations in management accounting. These new practices will be discussed in later chapters.

Organizational Structure

LEARNING OBJECTIVE 2

Understand the role of management accountants in an organization.

Since organizations are made up of people, management must accomplish its objectives by working *through* people. Presidents of companies like Good Vibrations, Inc., could not possibly execute all of their company's strategies alone; they must rely on other people. This is done by creating an organizational structure that permits *decentralization* of management responsibilities.

Decentralization

Decentralization is the delegation of decision-making authority throughout an organization by providing managers at various operating levels with the authority to make decisions relating to their area of responsibility. Some organizations are more decentralized than others. Because of Good Vibrations, Inc.'s geographic dispersion and the peculiarities of local markets, the company is highly decentralized.

Good Vibrations, Inc.'s president (also called chief executive officer or CEO) sets the broad strategy for the company and makes major strategic decisions such as opening stores in new markets, but much of the remaining decision-making authority is delegated to managers on various levels throughout the organization. These levels are as follows: The company has a number of retail stores, each of which has a store manager as well as a separate manager for each section such as international rock and classical/jazz. In addition, the company has support departments such as a central Purchasing Department and a Personnel Department. The organizational structure of the company is depicted in Exhibit 1–3.

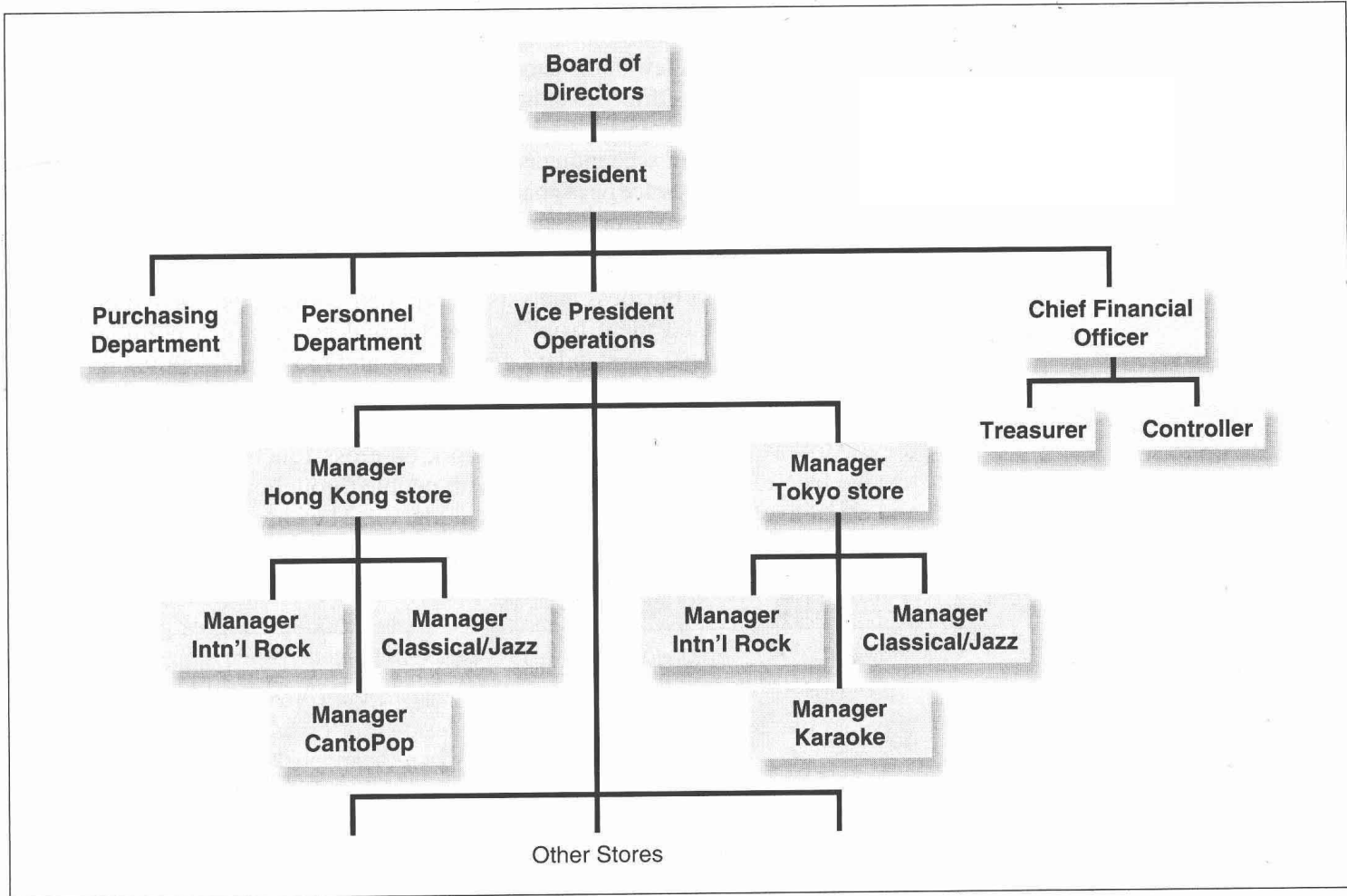
The arrangement of boxes shown in Exhibit 1–3 is called an **organization chart**. The purpose of an organization chart is to show how responsibility has been divided among managers and to show formal lines of reporting and communication, or *chain of command*. Each box depicts an area of management responsibility, and the lines between the boxes show the lines of formal authority between managers. The chart tells us, for example, that the store managers are responsible to the operations vice president. In turn, the latter is responsible to the company president, who in turn is responsible to the board of directors. Following the lines of authority and communication on the organization chart, we can see that the manager of the Hong Kong store would ordinarily report to the operations vice president rather than directly to the president of the company.

Informal relationships and channels of communication often develop outside the formal reporting relationships on the organization chart as a result of personal contacts between managers. The informal structure does not appear on the organization chart, but it is often vital to effective operations.

Line and Staff Relationships

An organization chart also depicts *line* and *staff* positions in an organization. A person in a **line** position is *directly* involved in achieving the basic objectives of the organization. A

⁴ H. Thomas Johnson, "Management Accounting in an Early Integrated Industrial: E. I. du Pont de Nemours Powder Company, 1903–1912," *Business History Review*, Summer 1975, pp. 186–187.

Exhibit 1-3 Organization Chart, Good Vibrations, Inc.

person in a **staff** position, by contrast, is only *indirectly* involved in achieving those basic objectives. Staff positions *support* or provide assistance to line positions or other parts of the organization, but they do not have direct authority over line positions. Refer again to the organization chart in Exhibit 1-3. Since the basic objective of Good Vibrations, Inc., is to sell recorded music at a profit, those managers whose areas of responsibility are directly related to the sales effort occupy line positions. These positions, which are shown in a darker color in the exhibit, include the managers of the various music departments in each store, the store managers, the operations vice president, and members of top management.

By contrast, the manager of the central Purchasing Department occupies a staff position, since the only function of the Purchasing Department is to support and serve the line departments by doing their purchasing for them. However, both line and staff managers have authority over the employees in their own departments.

The Chief Financial Officer

As previously mentioned, in the United States the manager of the accounting department is often known as the *controller*. The controller in turn reports to the *Chief Financial Officer (CFO)*, who usually comes from an accounting background. The **Chief Financial Officer** is the member of the top management team who is responsible for providing timely and relevant data to support planning and control activities and for preparing financial statements for external users. An effective CFO is considered a key member of the top management team whose advice is sought in all major decisions. The CFO is a highly paid professional who has command over the technical details of accounting and finance, who can provide leadership to other professionals in his or her department, who can