A Preview of This Chapter

In Chapter 1, we begin the study of managerial accounting by discussing what is meant by accounting information and how accounting information is used by both internal and external users to make decisions. The chapter also describes the decision-making role of managers in organizations, provides a decision framework for assessing those decisions, and discusses the role of relevant factors, risk, and ethics in decision making.

Key concepts include:
- Accounting information includes both financial (quantitative) and nonfinancial (qualitative) information used by decision makers.
- Managerial accountants facilitate management decision making.
- Accounting information systems are continually evolving to meet the changing demands of their users.
- Never make decisions with just the numbers! Always consider nonnumerical (qualitative) information.
- Sunk costs are not relevant.
- Future costs that do not differ between alternatives are not relevant.
- Opportunity costs are relevant.

A Preview of Upcoming Chapters

Chapters 2 through 4 provide an introduction into the basics of production processes used by manufacturing companies, cost flows in manufacturing, merchandising and service companies, and basic product and service costing methods used in various types of organizations.

Learning Objectives

After studying the material in this chapter, you should be able to:

LO1 Understand the uses and users of accounting information
LO2 Understand the decision-making role of managers
LO3 Apply a basic four-step decision-making model
LO4 Evaluate the role of relevant factors and decision making
LO5 Understand and evaluate the role of risk in decision making
LO6 Understand and evaluate the role of ethics in decision making
The main focus of accounting is decision making. In fact, the American Accounting Association defines accounting as “the process of identifying, measuring and communicating economic information to permit informed judgments and decisions by users of information” (A Statement of Basic Accounting Theory, 1966, 1). All organizations—large and small; manufacturing, merchandising, or service; profit or nonprofit—have a need for accounting information. The primary role of accounting is to provide useful information for the decision-making needs of investors, lenders, owners, managers, and others both inside and outside the company. However, the needs of internal users and external users often differ. This chapter defines accounting information and its application by both external and internal users. The chapter then describes the decision-making role of management in planning, operating, and controlling and provides a framework for assessing decisions that commonly face managers of organizations. The chapter also provides a discussion of the role of relevant factors, risk, and ethics as they pertain to decision making.
INTRODUCTION

All types of organizations, from large multinational manufacturing companies like Ford Motor Company to small custom-furniture manufacturers, have a need for accounting information. Retailers, such as Wal-Mart and locally owned hardware stores; large service companies, such as FedEx and local CPA and law firms; and even nonprofit organizations, such as the American Red Cross and small local museums and homeless shelters, need accounting information. This information is used by internal managers in their day-to-day decision making and also by external users, such as investors, creditors, donors, and even the Internal Revenue Service.

ACCOUNTING INFORMATION

LO1 Understand the uses and users of accounting information

Accounting information is provided by a company’s accounting information system (AIS). Traditionally, the AIS was simply a transaction processing system that captured financial data resulting from accounting transactions. For example, the AIS would document a transaction to purchase materials by recording a journal entry showing the date of purchase, a debit to raw materials inventory, and a credit to accounts payable or cash.

Under this view of AIS, accounting information was simply financial information (sales, net income, total assets, costs of products, etc.) expressed in terms of dollars or other monetary units (e.g., yen, francs, pesos). Other nonmonetary information—such as (1) the number of units of materials or inventory on hand, (2) the number of budgeted labor hours to produce a product, (3) the number of units necessary to break even, and (4) the time it takes to manufacture a product—were likely collected and processed outside the traditional accounting information system. The use of multiple information systems within a company causes a number of problems. It is costly to support multiple systems. Perhaps more important, it is difficult to integrate information coming from various systems and to make decisions for a company with multiple sources of information. In addition, other useful information concerning transactions—such as the quality of the material purchased, the timeliness of its delivery, or customer satisfaction with an order—might not be captured at all and therefore not evaluated by management.

Over the past few years, enterprise resource planning (ERP) systems have been developed in an attempt to address these shortcomings. ERP systems integrate the traditional AIS with other information systems to capture both quantitative and qualitative data, to collect and organize that data into useful information, and to transform that information into knowledge that can be communicated throughout an organization (see Exhibit 1-1). These systems can be customized to provide specific and relevant information to various types of users. For example, information for tax-reporting purposes must conform to the requirements of federal, state, and local taxing authorities, whereas information used in preparing financial statements and annual reports for shareholders and creditors must meet the requirements of generally accepted accounting principles (GAAP) and the Securities and Exchange Commission (SEC). On the other hand, information provided to internal users (managers) is thoroughly integrated across the organization and yet is customized to the needs and desires of the particular user.

With an ERP system, the sale of a product not only generates financial information by updating the cost of goods sold and profits but also updates inventory records, adjusts production schedules if necessary, and orders raw materials. In addition, delivery time, warranty claims, and service calls can be tracked and are available to managers across the organization. Therefore, production managers would know when to expect shipments of materials. Sales representatives could access information about expected delivery times to their customers, and customer service representatives could see records of previous service calls. All this information contributes to the cost-effective management of a company and to better decision making.

Throughout our study of managerial accounting information and its use in decision making, the importance of considering both quantitative and qualitative information is
The uses of ERP systems as decision-making tools are discussed more fully in Chapter 13. At this point, it is important simply to understand that in order to provide managers with the information they need to effectively plan, operate, and control their businesses, financial data must be linked to nonfinancial (qualitative) data, transformed into useful information and knowledge, and communicated throughout an organization.

Exhibit 1-1: A Contemporary View of Accounting Information

Key Concept: Accounting information includes both financial (quantitative) and nonfinancial (qualitative) information used by decision makers.

The Users of Accounting Information

External Users

There are many different users of accounting information both external and internal to the organization. Stockholders, potential investors, creditors, government taxing agencies and regulators, suppliers, and customers are all external users. What type of information do external users need? Stockholders and potential investors want information to help them analyze the current and future profitability of an organization. Companies that have
issued stock to the public (or those that plan to) provide this information in the form of annual reports, registration statements, prospectuses, and other reports issued to shareholders, prospective investors, and the SEC. The information required in these reports and the accounting methods used to prepare them are governed by the SEC and GAAP. Although this information is primarily quantitative and monetary (sales and net income), it also may include nonmonetary information, such as units shipped and market share. It also may include qualitative information, such as “management’s discussion and analysis of financial condition and results of operations,” which is found in annual reports.

What about smaller companies that are owned by just a few members of a family (closely held) or nonprofit organizations, such as the Red Cross? External users of financial information, such as banks or potential donors to nonprofit organizations, still need accounting information to make the proper decision about lending or donating money. However, their needs may differ from those of stockholders and potential investors. Creditors generally want to assess a company’s overall financial health and may be particularly interested in a company’s cash flow or ability to repay their loans. Potential contributors to nonprofit organizations may have a need for both monetary information, such as how much of the Red Cross’s budget is spent for charitable purposes, and nonmonetary information, such as how many women with children are served by the local homeless shelter.

Government agencies (federal, state, and local) have very specific information needs, including the measurement of income, payroll, and assets for purposes of assessing taxes. This accounting information is typically provided on income tax returns, payroll reports, and other forms designed specifically to meet the requirements of each agency.1

Generally, accounting information provided to shareholders, creditors, and government agencies is characterized by a lack of flexibility (its content is often dictated by the user), the reporting of past events using historical costs (financial statements for the previous three years), and an emphasis on the organization as a whole.

Suppliers and customers are also external users. However, their accounting information needs are likely to be very different from those of other external users and may be more clearly aligned with the needs of internal users. For example, suppliers of car parts to General Motors need detailed information on inventory levels of specific parts in order to know when to manufacture and ship parts. Bank customers may want to check on their account or loan balances before making a major purchase. Someone buying a new computer may want to check on the expected delivery date or whether a product is back-ordered before placing an order. This type of information needs to be much more detailed and timely than that provided to most other external users.

1It should be noted that many nonprofit organizations that do not pay income taxes are still required to provide the Internal Revenue Service with information that is available for use by donors and other interested parties.
**INTERNAL USERS**

Internal users of accounting information include individual employees as well as teams, departments, regions, and top management of an organization. For convenience, these internal users are often just referred to as managers. Managers are involved in a variety of activities, including planning, operating, and controlling. These activities all involve making decisions both on an individual basis and in teams (see Exhibit 1-2).

**THE DECISION-MAKING ROLE OF MANAGERS**

**Planning** involves the development of both the short-term (operational) and the long-term (strategic) objectives and goals of an organization and an identification of the resources needed to achieve them. Operational planning involves the development of short-term objectives and goals (typically, those to be achieved in less than one year). Examples of operational planning for Ben & Jerry's include planning the raw material and production needs for each type of ice cream for the next four quarters or determining the company's short-term cash needs. Operational planning for a hospital would include budgeting for the number of physicians, nurses, and other staff that are needed for the upcoming month or determining the appropriate level of medical supplies to have in inventory. Operational planning also involves the determination of short-term performance goals and objectives, including meeting customer service expectations, sales quotas, time budgets, and so on.

Strategic planning addresses long-term questions of how an organization positions and distinguishes itself from competitors. For example, Ben & Jerry's strategy for producing high-quality ice cream is very different from that used for producing a store brand of lower-priced ice cream. Long-term decisions about where to locate plants and other facilities, whether to invest in new state-of-the-art production equipment, and whether to introduce new products or services and enter new markets are strategic planning decisions. Strategic planning also involves the determination of long-term performance and profitability measures, such as market share, sales growth, and stock price.

**EXHIBIT 1-2** Percentage of IMA Survey Respondents Who Work on Cross-Functional Teams

<table>
<thead>
<tr>
<th>Size of Finance Organization (within a company)</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–9 people</td>
<td>52%</td>
</tr>
<tr>
<td>10–49 people</td>
<td>55%</td>
</tr>
<tr>
<td>50+ people</td>
<td>67%</td>
</tr>
</tbody>
</table>

**OPERATING**

*Operating activities* encompass what managers must do to run the business on a day-to-day basis. Operating decisions for manufacturing companies include whether to accept special orders, how many parts or other raw materials to buy (or whether to make the parts internally), whether to sell a product or process it further, whether to schedule overtime, which products to produce, and what price to charge. Other operating decisions affecting all organizations include assigning tasks to individual employees, whether to advertise (and the corresponding impact of advertising on sales and profits), and whether to hire full-time employees or to outsource.

**CONTROLLING**

*Controlling activities* involve the motivation and monitoring of employees and the evaluation of people and other resources used in the organization's operations. The purpose of control is to make sure that the goals of the organization are being attained. It includes using incentives and other rewards to motivate employees to accomplish an organization's goals and mechanisms to detect and correct deviations from those goals. Control often involves the comparison of actual outcomes (cost of products, sales, etc.) with desired outcomes as stated in the organization's operating and strategic plans. Control decisions include questions of how to evaluate performance, what measures to use, and what types of incentives to implement. For example, a company that emphasizes high-quality products and excellent customer service may evaluate and reward production workers who have exceeded goals based on these virtues (such goals, for example, may involve specifying the percentage of allowable defective units or scrap, monitoring customer complaints, or a myriad of other factors).

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**The Role of the Managerial Accountant**

In 1996, the Institute of Management Accountants (IMA) commissioned a “Practice Analysis of Management Accounting.” Through surveys of 4,000 accountants working in organizations and detailed interviews of accountants at nine corporations, the IMA Practice Analysis provides a detailed view of what managerial accountants do and are expected to do in the future. This study was updated in 1999.

So what do they do? Managerial accountants have traditionally been thought of as the bean counters or number crunchers in an organization. However, the Practice Analysis found that advances in accounting information systems and other changes in the past five or ten years have resulted in the automation of traditional accounting functions involving data collection, data entry, and data reporting and a corresponding shifting of those functions from management accounting to clerical staff. The study found that management accountants in many companies have been liberated from the mechanical tasks of their work. Instead of collecting information, management accountants are expected to use that freed-up time to analyze it. Instead of preparing financial statements, they interpret the financial information and explain the business implications to managers. They are doing more financial planning and more financial modeling. They work with managers to make informed business decisions. (Siegel and Kulesza, 1996, 21)

Management accountants have become decision-support specialists who “see their role as distilling diverse information, putting it into a useful format, and facilitating management decision making” (Siegel and Kulesza, 1996, 22) (see Exhibit 1-3).

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**Key Concept:** Managerial accountants facilitate management decision making.
Effective decision making is critical in today's business environment. According to Gary Lubin of Merck Capital Ventures (MCV), “business is about making decisions; the better the decision, the better the result.”

MCV is a subsidiary of Merck & Co. Its focus is to invest in technologies (e.g., the Internet) that accelerate innovation related to the pharmaceutical business, the pharmacy benefit management industry, and many other sectors of health care delivery.

In his current position at MCV, Lubin (a licensed CPA with an accounting degree from Washington University and an M.B.A. from Harvard) is responsible for the identification and review of investment opportunities for MCV and for coordinating work between MCV and other Merck business units. His previous assignments at Merck include serving as vice president of Merck-Medco's E-Business Department and as vice president of sales, planning, and operations for Merck-Medco Managed Care, LLC.

At MCV, “when evaluating whether to invest in a company, we use accounting techniques to frame our alternatives, understand the tradeoffs, identify risks and value the business. Accounting information becomes the common denominator and an important way to evaluate different options.”
THE ROLE OF OTHER MANAGERS

Managers are found in all functional areas of an organization, including marketing, operations/production, human resources, and finance. What kind of accounting information does this diverse group of managers need, and what is the role of the managerial accountant in providing it? Although managers rely on the same information provided to external users, they have other needs as well. In addition, information flow is a two-way street. Whereas managers in other functional areas rely on accounting information to make decisions, managerial accountants also rely on information provided by marketing, operations/production, human resources, and finance.

MARKETING MANAGERS

Marketing is the “process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, services, organizations, and events to create and maintain relationships that satisfy individual and organizational objectives” (Boone and Kurtz, 1998, 9). Marketing managers need to know how much a product costs in order to help establish a reasonable selling price. They need to know how a given advertising campaign and its resulting impact on the number of units sold is expected to affect income. They need to know how enhancing a product’s features or changing its packaging will influence its cost. Commissions paid to sales representatives may be based on a company’s profits. All these marketing decisions require accounting information. Note that information also flows from marketing to accounting. For example, marketing will provide sales forecasts and estimates to managerial accountants for purposes of budgeting.

OPERATIONS/PRODUCTION MANAGERS

The operations and production function produces the products or services that an organization provides to its customers. Production and operations managers are concerned with providing quality products and services that can compete in a global marketplace. They need accounting information to make planning decisions affecting how and when products and services are produced. They need to know the costs of producing and storing products in order to decide how much inventory should be kept on hand. They need to know the costs of labor when making decisions to schedule overtime to complete a production run or when deciding how many physicians are needed in the emergency room. These decisions are also influenced by information provided by the marketing managers, including the expected customer reaction if products are not available when orders are placed or if doctors are not available when patients need them.

Operations and production managers have been forced by a global economy and increasing customer demands to change the methods used to produce products and services. As a consequence, they have placed demands on accounting information systems to provide even more timely and accurate information for decision making as well. The information provided by accounting information systems is continually evolving to meet the demands of its users.

**Key Concept:** Accounting information systems are continually evolving to meet the changing demands of their users.

FINANCE MANAGERS

The finance function is responsible for managing the financial resources of the organization. Finance managers make decisions about how to raise capital as well as where and how it is invested. Finance managers need accounting information to answer such questions as whether money should be raised through borrowing (issuing bonds) or selling stock. Finance managers make decisions concerning whether a new piece of manufacturing equipment should be purchased or leased and whether a plant expansion should be paid for in cash or by borrowing money from the bank.
A Summary of Accounting Information Used by Internal and External Users

In general, accounting information needed by internal users differs from that needed by external users in the following ways:

- It is more flexible.
- It is geared to the specific company and user and does not have to meet the requirements of the SEC, GAAP, or government taxing agencies.
- It is more forward looking, often emphasizing the future rather than the past.
- It is more timely, sometimes sacrificing accuracy in the process.
- It emphasizes segments of an organization more than the company as a whole.

Exhibit 1-4 summarizes the external and internal users of accounting information, the type of information typically needed by these users, and the source of the information.

An Introduction to Decision Making

Although the problems and questions facing marketing, production, finance, and human resource managers of organizations are all different, the decision-making process that they follow is remarkably uniform. In fact, it is the same decision-making model that you are likely to use when making nonbusiness decisions. Do you remember the decision-making process you went through the last time you made a major decision? It could have been a decision to purchase or sell a car, a computer, or a stereo system. It could have been a decision to attend a particular college, accept a summer job, or perhaps even get married.

Decisions such as these have many variables or factors that must be considered. If you were making a decision to purchase a car, you would consider such variables as its cost, features, color, and financing options. If you were making a decision about what college to attend, factors might include the cost, proximity to your home, and academic reputation. Different decision makers might even consider different factors for the same decision situation. For example, the color of a car may not be important to one buyer but critical to another. The number and type of variables considered might be different for each individual and for each decision the individual makes.

Decisions may have to be made under time, budget, or other constraints. Your choice of a car may be limited to those that cost under $10,000. Your decision to accept a summer job may be limited to those that are within 30 miles of your home. Your decision to...
attend a college may have to be made by a certain date. In addition, many decisions are made with missing information or at least with imperfect information. In deciding which car to buy, you would probably want to consider the cost of future repairs for various models. Although you might estimate these costs by using such sources as *Consumer Reports*, you will not know with certainty. Decisions may not be perfect, but they should be the best you can make given the information that is available to you at the time. The process you go through is to gather all the information you can to reduce the risk of an incorrect or less than optimal decision.

Decisions often lead to other decisions. Once you have decided to buy a car or a stereo, you need to make other decisions, such as whether to pay cash or to finance the purchase or whether to buy an extended warranty. It does seem as though life is a never-ending string of decisions.

In this chapter, we discuss decision problems in general and how to gather as much relevant information as possible to reduce the risk of incorrect decisions. The decision-making model presented here will allow you to approach complex decisions in an orderly fashion.

**Decision making** is the process of identifying different courses of action and selecting one appropriate to a given situation. All decisions require using judgment. The quality of the decision often depends on how good that judgment is. Judgment refers to the cognitive aspects of the decision-making process. By cognitive, we mean taking a logical, thinking approach to making decisions rather than just making decisions on the spur of the moment.

### EXHIBIT 1-4 External and Internal Users of Accounting Information

<table>
<thead>
<tr>
<th>Users</th>
<th>Type of Accounting Information Needed</th>
<th>Provided in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shareholders and creditors</td>
<td>Sales, gross profit, net income, cash flow, assets and liabilities, earnings per share, etc. Although this information is primarily monetary, it may also include nonmonetary information (units in inventory). This information is often provided in summary form (for the company as a whole) and typically is historical in nature.</td>
<td>Annual reports, financial statements, and other available documents</td>
</tr>
<tr>
<td>Government agencies</td>
<td>Varies by agency but includes taxable income, sales, assets, comparisons of actual expenditures to budgets, etc. This information is usually provided for the company as a whole and is historical in nature. It can include both monetary and nonmonetary information.</td>
<td>Tax returns and other reports</td>
</tr>
<tr>
<td>Customers and suppliers</td>
<td>Order status, shipping dates, inventory levels, etc. This information must be very detailed and timely to be useful.</td>
<td>Limited-access databases available to specific customers and suppliers</td>
</tr>
<tr>
<td>Marketing, operations and production, finance, and human resource managers</td>
<td>Timely and detailed information on sales and expenses, product costs, budget information, and measures of performance. Often includes nonmonetary data (direct labor hours, units to break even, etc.). Accounting information is often needed for segments of an organization and is more likely future oriented than historical.</td>
<td>Cost reports, budgets, and other internal documents</td>
</tr>
</tbody>
</table>
moment. In this section of the chapter, we learn how to structure a decision problem so that we will use better judgment when making decisions.

Using a basic decision-making model does not guarantee that all our decisions will be correct, but it will allow us to increase the odds of making a good decision. A lot of decisions have more than one acceptable solution, as do a lot of the problems and cases in this textbook. The trick is to pick the best solution for each particular decision-making situation.

A Decision-Making Model

Step 1: Define the Problem

When faced with a problem, the first step is to define it accurately. Managers (and students) often act without a clear understanding of the real problem. In fact, many bad decisions are made simply because the decision maker is trying to solve the wrong problem. For example, a company experiencing a reduction in sales might erroneously define the problem as low sales volume (and attempt to solve the problem by providing increased sales incentives) when the real problem is poor quality of the product sold. Problem definition requires the cooperation of managers in all functional areas of an organization. Whereas a single manager might focus on the reduction in sales, input by accounting, operations, marketing, and sales managers will most likely result in a clearer picture of the underlying problem (poor quality) causing the reduction in sales. This may lead to even further refinements, such as identifying the specific type of material that is causing the quality problem. Accurately defining a problem requires a willingness to listen to others, good judgment, and lots of practice.

Step 2: Identify Objectives

The second step in the decision-making process is to identify the objectives in finding a solution to the problem. Objectives may be quantitative (to buy at the best price or to increase net income), qualitative (to buy the highest-quality component or to increase customer satisfaction), or a combination of the two.

Step 3: Identify and Analyze Available Options

The third step in the decision-making process is to identify the options available to achieve your objectives and analyze those options. This step requires the consideration of relevant variables affecting the problem and of alternative courses of action. Most decisions require the decision maker to consider more than one option and multiple variables.

Dilbert by Scott Adams
These variables should include both quantitative and qualitative factors. The key here is to identify only the variables that are relevant to a particular decision. The concept of relevant factors is discussed in more detail on page 15.

**IN THE NEWS**

Every year, Consumer Reports publishes an issue called a “Buyers Guide.” This guide provides a variety of qualitative information to aid your decision in purchasing products evaluated by this organization.

**STEP 4: SELECT THE BEST OPTION**

The fourth and last step is to select the best option. We need to answer the question of how well each of our options will achieve our objective or objectives. This is sometimes the most difficult step in the process. Just as our options and variables included both quantitative and qualitative factors, our solution should consider both as well. As a general rule, you should never make decisions based only on quantitative information. Often, qualitative information is at least as important as or more important than quantitative information.

**Key Concept:** Never make decisions with just the numbers! Always consider nonnumerical (qualitative) information.

**PAUSE & Reflect**

What were the risks in your decision to purchase a particular product?

**PAUSE & Reflect**

Evaluate your decision to purchase a product. Was your decision a good one?

At this stage, the decision maker must also recognize that decisions are often made in the face of uncertainty. This step in the decision process will involve our preference for risk and our estimate of what chance the future events have of happening. The impact of risk on decision making is discussed more completely on page 16.

To summarize, we follow these four steps in the process of making decisions (see Exhibit 1-5):

1. Define the problem.
2. Identify objectives.
3. Identify and analyze available options.
4. Select the best option.

Once we have completed the preceding process and chosen the best option, we must then implement our decision and evaluate the results. We may have to go back to Step 1 and repeat the process if the decision turns out to be less than optimal.
Step 3 in our decision-making model is to identify and analyze relevant factors affecting the decision. How do decision makers determine whether a factor is relevant? Relevant factors are those that affect a particular decision. Therefore, they must be factors that differ between alternatives. In deciding between automobiles, if they all have the same options at the same cost (air conditioning, AM/FM stereo, etc.), those options are not relevant to the decision. Very often, costs are key factors that must be considered in decisions. As with other factors, relevant costs are those that differ between alternatives. Another way to view relevant costs is to identify those that are avoidable or can be eliminated by choosing one alternative over another. In choosing between automobiles, if one car has air conditioning and another does not, the cost of air conditioning is relevant because choosing one of the alternatives could eliminate that cost.

Sunk costs are costs that have already been incurred. Because sunk costs cannot be avoided, they are not relevant in decisions. In your decision to trade in your old vehicle, the amount that you paid for it may appear to be important. However, because that cost is sunk, it cannot be avoided, is not relevant, and should not be considered in your decision.

**Key Concept:** Sunk costs are not relevant.

**Concept Question:** As a production manager of a manufacturing company, you have become aware of a new machine that can reduce the cost of making a product by 30 percent. However, your boss says that you can’t buy the new equipment until the old equipment is fully depreciated in two more years. Is the depreciation on the old machine a relevant cost? What factors are relevant?

**Concept Answer:** Depreciation on the old machine is sunk and therefore is not relevant.

If sunk costs are not relevant, what about other costs that will be incurred in the future? Are all costs that are not sunk relevant? Again, the key is that relevant costs are avoidable costs. If future costs do not differ between alternatives, they are not avoidable (they will be incurred regardless of the alternative chosen) and therefore are not relevant. In your choice of an automobile, if the cost of an option is the same, that cost is not relevant in your decision.

**Key Concept:** Future costs that do not differ between alternatives are not relevant.

Opportunity costs are the benefits forgone by choosing one alternative over another and are relevant costs for decision-making purposes as well. For example, in choosing to go to college, you are forgoing the salary you could receive by working full time. Almost all alternatives have opportunity costs. In choosing to work instead of going to school, the
opportunity cost is the higher salary that you might earn if you choose to go to school. Opportunity costs are sometimes difficult to quantify but nevertheless should be considered in making decisions.

**Key Concept:** Opportunity costs are relevant.

### Risk and Decision Making

**LO5**
Understand and evaluate the role of risk in decision making

As mentioned earlier, most decisions involve risk. A decision maker’s goal is to consider (and possibly to minimize) the risk of decisions. One of the factors that come into play when selecting the best option (Step 4) is the attitude toward risk. If the decision makers are risk seekers, they will rate the alternatives one way. If they are risk averse, they will probably rate the alternatives differently. For example, risk-averse decision makers may rate more highly an automobile that has been in production a couple of years and has a history of being reliable than a brand new model with no track record.

A quantitative method of considering the risk of decision factors is by adjusting the discount rate used in time value of money calculations (see Chapter 8 for a more detailed discussion of this important concept). Cash flows occurring farther in the future might be discounted at a higher interest rate than cash flows occurring in the next year or two. Increasing the interest rate in present-value calculations has the impact of decreasing the present value of those cash flows.

A second way of adjusting for risk is by considering the probability that certain events will occur. For example, in the choice of an automobile, the interest rate on the loan may be an important factor. However, a particular dealer may not guarantee the interest rate before the loan is approved. Knowing that the probability of the rate’s changing is 50 percent, you can adjust the rating accordingly to take this risk into account.

A third method of considering risk is through sensitivity analysis. Sensitivity analysis is the process of changing the values of key variables considered in the analysis to determine how sensitive decisions are to those changes. For example, if the purchaser of an automobile is not 100 percent sure of qualifying for the best possible loan package at all the dealers, he or she may want to consider the cost of that automobile, taking into account all possible finance packages. If this adjustment changes the decision, the decision is sensitive to changes in that variable. If it does not change the decision, the decision is not sensitive to that variable.

### Ethics and Decision Making

**LO6**
Understand and evaluate the role of ethics in decision making

Ethical issues frequently arise in the course of personal decision making. Sometimes the ethical issues are clear (should you keep the money in the wallet you found or return it to its owner) but at other times they may be a little cloudy. For example, what ethical responsibilities does the owner of a used car have in telling a prospective buyer about potential problems?

Likewise, ethical issues in business decisions may be fuzzy. Although most of us would agree that it would be unethical for businesses to sell products that are known to be unsafe to customers, cigarette manufacturers do just that every day. Is the use of inexpensive foreign labor by shoe and apparel manufacturers an acceptable business practice or a serious lapse of ethical responsibility? Is the release of chemicals into the environment as a by-product of an electric utility or a paper mill an acceptable cost of providing products to a demanding customer or an unacceptable and unethical practice?

Regardless of how you feel about these and other ethical issues, companies must consider the implications of such decisions. As special-interest groups grow more vocal about environmental issues and working conditions, consumers boycott products and switch brands, and investors consider ethical and social criteria in making investments, ethical
Pricing decisions are an important consideration for companies attempting to maximize their profitability. However, pricing decisions are likely to influence other factors (such as the volume of products sold) and cannot be made in isolation. The impact of changing prices on the number of units sold is usually not known with certainty. How might you as a manager take this risk into account in determining the selling price of your products?

**Concept Question:** What ethical responsibilities does a company have to its shareholders, employees, customers, and the communities in which it is located?

**Concept Answer:** Although companies take various approaches to ethical responsibility, they often provide guidance to their employees through the use of a formal code of ethics concerning what is acceptable ethical behavior. Codes may be very specific and mention acceptable and unacceptable behavior or just provide a general framework and value system that employees can use in their day-to-day decision making. For example, Ben & Jerry’s mission statement consists of three interrelated parts:

- **Product**—to make, distribute, and sell the finest quality all-natural ice cream and related products in a wide variety of innovative flavors made from Vermont dairy products.
- **Economic**—to operate the company on a sound financial basis of profitable growth, increasing value for our shareholders, and creating career opportunities and financial rewards for our employees.
- **Social**—to operate the company in a way that actively recognizes the central role that business plays in the structure of society by initiating innovative ways to improve the quality of life of a broad community—local, national, and international (http://www.benjerry.com).

A variety of professional organizations also have ethical codes of conduct that apply to their members. In 1997, the Institute of Management Accountants issued a revised code

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2 Berenebeim reports that 84 percent of U.S. companies surveyed had an ethics code and that 45 percent have enacted them since 1987 ("The Corporate Ethics Test," *Business and Society Review*, 1992).
of ethics for management accountants, stating that “practitioners of management accounting and financial management have an obligation to the public, their profession, the organizations they serve, and themselves, to maintain the highest standards of ethical conduct.” The full text of the code is provided in the appendix to this chapter.

With a little elaboration, our four-step decision model is sufficient to handle the consideration of ethical issues. In Step 2, objectives should include the consideration of a company’s ethical responsibilities. This might include such statements as, “the decision should result in a higher-quality product or a safer product for customers.” It might require explicit acknowledgment that the well-being of employees will be considered in the decision or that the decision must not harm the environment. Ethical decision making requires managers to consider who will be affected by the decision and how.

If a company’s objectives include the consideration of ethical responsibilities, it is important to identify the major principles, laws, and values that have a bearing on the decision in Step 3. Principles include such qualities as integrity, honesty, and respect for others. Laws affecting business decisions include the Internal Revenue Code and the Foreign Corrupt Practices Act of 1977, which makes it illegal for U.S. corporations to make improper payments or bribes to help in the acquisition of sales. Values include not only such things as the importance of the quality and safety of products but also the desire to earn a profit or protect one’s job. If a company’s ethical responsibilities are adequately and explicitly acknowledged in Step 2 and Step 3 of the decision model, selecting the best option in Step 4 will consider ethical objectives as well as the monetary impact of a particular decision.

In the mid 1990s, Anheuser-Busch launched a campaign to discourage beer distributors from carrying microbrews. The company offered discounts and subsidized advertising and limited distributors’ ability to bring rival brews to bars and retailers. When the distributors began to abandon the microbrews, the microbrews brought suit against Anheuser-Busch. Anheuser-Busch maintains that the actions are legitimate and legal.
Appendix

Standards of Ethical Conduct for Practitioners of Management Accounting and Financial Management

Practitioners of management accounting and financial management have an obligation to the public, their profession, the organizations they serve, and themselves, to maintain the highest standards of ethical conduct. In recognition of this obligation, the Institute of Management Accountants has promulgated the following standards of ethical conduct for practitioners of management accounting and financial management. Adherence to these standards, both domestically and internationally, is integral to achieving the Objectives of Management Accounting. Practitioners of management accounting and financial management shall not commit acts contrary to these standards nor shall they condone the commission of such acts by others within their organizations.

Competence

Practitioners of management accounting and financial management have a responsibility to:

- Maintain an appropriate level of professional competence by ongoing development of their knowledge and skills.
- Perform their professional duties in accordance with relevant laws, regulations, and technical standards.
- Prepare complete and clear reports and recommendations after appropriate analyses of relevant and reliable information.

Confidentiality

Practitioners of management accounting and financial management have a responsibility to:

- Refrain from disclosing confidential information acquired in the course of their work except when authorized, unless legally obligated to do so.
- Inform subordinates as appropriate regarding the confidentiality of information acquired in the course of their work and monitor their activities to assure the maintenance of that confidentiality.
- Refrain from using or appearing to use confidential information acquired in the course of their work for unethical or illegal advantage either personally or through third parties.

Integrity

Practitioners of management accounting and financial management have a responsibility to:

- Avoid actual or apparent conflicts of interest and advise all appropriate parties of any potential conflict.
- Refrain from engaging in any activity that would prejudice their ability to carry out their duties ethically.
- Refuse any gift, favor, or hospitality that would influence or would appear to influence their actions.
- Refrain from either actively or passively subverting the attainment of the organization’s legitimate and ethical objectives.
- Recognize and communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.
• Communicate unfavorable as well as favorable information and professional judgments or opinions.
• Refrain from engaging in or supporting any activity that would discredit the profession.

**Objectivity**

Practitioners of management accounting and financial management have a responsibility to:

• Communicate information fairly and objectively.
• Disclose fully all relevant information that could reasonably be expected to influence an intended user’s understanding of the reports, comments, and recommendations presented.

**Resolution of Ethical Conflict**

In applying the standards of ethical conduct, practitioners of management accounting and financial management may encounter problems in identifying unethical behavior or in resolving an ethical conflict. When faced with significant ethical issues, practitioners of management accounting and financial management should follow the established policies of the organization bearing on the resolution of such conflict. If these policies do not resolve the ethical conflict, such practitioners should consider the following courses of action:

• Discuss such problems with the immediate superior except when it appears that the superior is involved, in which case the problem should be presented initially to the next higher managerial level. If satisfactory resolution cannot be achieved when the problem is initially presented, submit the issues to the next higher managerial level. If the immediate superior is the chief executive officer, or equivalent, the acceptable reviewing authority may be a group such as the audit committee, executive committee, board of directors, board of trustees, or owners. Contact with levels above the immediate superior should be initiated only with the superior’s knowledge, assuming the superior is not involved. Except where legally prescribed, communication of such problems to authorities or individuals not employed or engaged by the organization is not considered appropriate.
• Clarify relevant ethical issues by confidential discussion with an objective advisor (e.g., IMA Ethics Counseling Service) to obtain a better understanding of possible courses of action.
• Consult your own attorney as to legal obligations and rights concerning the ethical conflict.
• If the ethical conflict still exists after exhausting all levels of internal review, there may be no other recourse on significant matters than to resign from the organization and to submit an informative memorandum to an appropriate representative of the organization. After resignation, depending on the nature of the ethical conflict, it may also be appropriate to notify other parties.

**Summary of Key Concepts**

• Accounting information includes both financial (quantitative) and nonfinancial (qualitative) information used by decision makers. (p. 5)
• Managerial accountants facilitate management decision making. (p. 8)
• Accounting information systems are continually evolving to meet the changing demands of their users. (p. 10)
• Never make decisions with just the numbers! Always consider nonnumerical (qualitative) information. (p. 14)
• Sunk costs are not relevant. (p. 15)
• Future costs that do not differ between alternatives are not relevant. (p. 15)
• Opportunity costs are relevant. (p. 16)

### Key Definitions

**Accounting information system (AIS)** A transaction processing system that captures financial data resulting from accounting transactions within a company (p. 4)

**Enterprise resource planning (ERP) systems** Systems used to collect, organize, report, and distribute organizational data and transform that data into critical information and knowledge (p. 4)

**Planning** The development of both the short-term (operational) and the long-term (strategic) objectives and goals of an organization and an identification of the resources needed to achieve them (p. 7)

**Operating activities** The day-to-day operations of a business (p. 8)

**Controlling activities** The motivation and monitoring of employees and the evaluation of people and other resources used in the operations of the organization (p. 8)

**Decision making** The process of identifying alternative courses of action and selecting an appropriate alternative in a given decision-making situation (p. 12)

**Quantitative** Can be expressed in terms of dollars or other quantities (units, pounds, etc.) (p. 13)

**Qualitative** Deals with nonnumerical attributes or characteristics (p. 13)

**Relevant costs** Those costs that differ between alternatives (p. 15)

**Sunk costs** Costs that have already been incurred (p. 15)

**Opportunity costs** The benefits forgone by choosing one alternative over another (p. 15)

**Risk** The likelihood that an option chosen in a decision situation will yield unsatisfactory results (p. 16)

**Sensitivity analysis** The process of changing the values of key variables to determine how sensitive decisions are to those changes (p. 16)

### Big Al’s

**Computer Simulation**

You can now turn to Appendix A of your text to start the portion of the Big Al’s simulation covering the decision to expand an existing pizza restaurant to include wholesale production and sales.

### Multiple Choice

1. Operational planning might address:
   - a. long-term investment decisions
   - b. measuring relative market share
   - c. quarterly production needs
   - d. all of the above

2. Which of the following statements is true?
   - a. Production managers find managerial accounting information useful.
   - b. Marketing managers would not find managerial accounting information useful.
   - c. Corporate managers rarely consider managerial accounting information in their decision-making process.
   - d. The costs of managerial accounting information often exceed the benefits.
3. In the past 10–20 years, the role of the management accountant has:
   a. not changed much
   b. been eliminated
   c. adapted to changes in the environment of business
   d. replaced the role of the financial accountant

4. _________ managers need to know how a given advertising campaign and its resulting impact on the number of units sold is expected to affect income:
   a. Marketing
   b. Operations/production
   c. Finance
   d. Human resource

5. Which of the following sequences of steps in the decision-making process is correct?
   a. define the problem, identify objectives, identify and analyze available options, select the best option
   b. identify objectives, define the problem, identify and analyze available options, select the best option
   c. select the best option, identify objectives, define the problem, identify and analyze available options
   d. define the problem, identify and analyze available options, select the best option

6. Sunk costs:
   a. have already been incurred
   b. can not be avoided
   c. are not relevant
   d. all of the above

7. Which of the following statements about the IMA's Standards of Ethical Conduct is true?
   a. Answers to all ethical questions can be found in the IMA Standards of Ethical Conduct.
   b. Management accountants who do not follow the IMA Standards of Ethical Conduct will be prosecuted by the IMA's disciplinary board.
   c. The IMA's Standards of Ethical Conduct provide guidelines for acceptable behavior.
   d. All accountants are required by law to comply with the IMA's Standards of Ethical Conduct.

8. Which of the following statements about ethics is true?
   a. Managerial accountants do not face ethical issues.
   b. Ethical issues frequently arise in the course of personal decision making.
   c. Research has found no link between ethics and the financial performance of large companies.
   d. Most managers within a company are likely to agree on ethical issues.

9. The four categories of responsibility in the IMA Standards of Ethical Conduct include all of the following except:
   a. compliance
   b. confidentiality
   c. integrity
   d. objectivity

10. In the IMA Standards of Ethical Conduct, avoiding actual or apparent conflicts of interest and advising all appropriate parties of any potential conflict is an example of:
    a. competence
    b. confidentiality
    c. integrity
    d. objectivity
Concept Review

11. Accounting information systems generate both monetary and nonmonetary accounting information. List two examples of each.
13. Define quantitative and qualitative information. Include in your definition some examples.
14. Give examples of quantitative and qualitative information for purchasing a new car. Would a car-purchase decision include both types of information?
15. List the most common external users of accounting information and what type of information they might need.
16. List the most common internal users of accounting information and what type of information they might need.
17. Discuss how a financial report for an internal user might differ from a financial report prepared for an external user.
18. Define strategic and operational planning.
19. Define control from a management perspective.
20. Assume that you have a 16-year-old son who has just received his driver's license. Your son does not do all the assigned work in his high school classes. What could you do to "control" his behavior regarding doing the assigned work in school? In other words, what sort of rewards or incentives would be appropriate to motivate him?
21. How has the role of the managerial accountant changed over time? What do managerial accountants do?
22. What type of accounting information do marketing managers need to make better decisions?
23. What type of accounting information do operations/production managers need to make better decisions?
24. What type of accounting information do finance managers need to make better decisions?
25. What type of accounting information do human resource managers need to make better decisions?
26. List and describe the four steps of the decision-making model.
27. How can risk be addressed in the decision-making model?
28. Define sunk costs and opportunity costs, and discuss their importance in decision making.

Application of Concepts

29. You are faced with the decision of choosing a new car. You have narrowed your options to four types of automobiles that fit your needs.

<table>
<thead>
<tr>
<th></th>
<th>Automobile 1</th>
<th>Automobile 2</th>
<th>Automobile 3</th>
<th>Automobile 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td>$12,000</td>
<td>$13,000</td>
<td>$14,000</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td>Radio, $250</td>
<td>Cassette, $350</td>
<td>CD player, $500</td>
<td>CD/Cassette player, $750</td>
</tr>
<tr>
<td><strong>Air</strong></td>
<td>None</td>
<td>$1,200</td>
<td>$1,250</td>
<td>$1,200</td>
</tr>
<tr>
<td><strong>Automatic Transmission</strong></td>
<td>$1,000</td>
<td>$1,200</td>
<td>$1,250</td>
<td>$1,500</td>
</tr>
<tr>
<td><strong>Power Package</strong></td>
<td>None</td>
<td>$850</td>
<td>$1,250</td>
<td>$500</td>
</tr>
</tbody>
</table>

**Required**

A. Define as best you can the decision problem that you face in choosing the best automobile for you.

B. What would be your objectives in choosing an automobile? Separate the objectives into qualitative and quantitative areas. In your specific situation, what would be your most important objective and why?
C. As you will recall, Step 3 of the decision-making model requires you to identify all available options. Discuss what you consider to be the available options in your decision to choose a new automobile. Discuss all relevant quantitative and qualitative variables affecting these options.

D. Which of the four automobiles is the best quantitative choice? Why?

E. List and discuss qualitative factors that may cause you or any other decision maker to choose an automobile that is not the best quantitative choice.

30. Kent Jackson, an English major, has to decide which course to enroll in during the summer session. A science course he wants to take is being offered at a cost of $800 plus laboratory fees of $10 per class (25 classes total). His other choice is a writing workshop with tuition of $950. In addition to selecting a course, Kent needs a place to stay during the summer. Although he already paid $500 for a dormitory room, Kent has decided that he can no longer live on campus. There are two rooms available: a private residence that would cost him $900 and a semiprivate room that would cost $600. Kent could sublet his dormitory but feels that he should keep it empty in case he changes his mind and returns to campus in the fall.

Required

A. What other costs should Kent consider in making his decision?

B. What are some qualitative factors Kent might want to consider before he makes his decision? Why?

C. Discuss all relevant variables pertaining to this decision.

D. If Kent has a fixed amount of $2,000 to live on during the summer, how would this fact affect his decision?

31. A friend has informed you of an opportunity for a part-time job that you are considering accepting during your last semester before graduation. It would start at the beginning of your last semester and require working 20 hours per week at a rate of $15 per hour. It would also provide some good experience that could lead to a full-time job after you graduate. However, it would require a 2-hour round-trip commute four days a week. In addition, you currently receive a monthly scholarship of $1,000 that stipulates that you cannot work off campus. Consequently, if you accept the job, you will have to give up the scholarship. You expect to register for 15 credit hours (five classes) during your last semester and have been told that each of the courses is very demanding. In addition to class time, you expect to study about 30 hours each week.

Required

Using the decision-making model introduced in the chapter:

A. Define the problem you face in deciding whether to accept the job.

B. Using your own personal situation, define your objectives related to the problem identified in part A.

C. What are your options, and what factors are likely to be relevant in making your decision?

D. What opportunity costs are associated with the decision?

E. Is the decision risky? How would you take risk into account when making your decision?

32. Many airlines offer special low rates to certain destinations, but these rates are available only to customers who can fly on short notice. Sometimes, low hotel rates are also available at the last minute. How can this behavior be explained in terms of relevant costs?

33. Bob would like to impress Jessica on their first date and is wondering whether he should make dinner or whether they should go to a nice restaurant. What factors are relevant in the decision?
34. It’s final exam time for Janet, and she is panicking because she doesn’t have enough time to study for her last two exams. She currently has the same average in both calculus and history. She estimates that, with sufficient study time, she could increase her grade in calculus by 15 points and her grade in history by 10 points. However, she has only six hours of study time available. Janet estimates that she can increase her final grade in calculus by 2 points for each one hour studied and increase her final grade in history by 3 points for every hour of study. To maximize her additional points, how much time should Janet study for each exam?

35. Is it ethical for a U.S. company operating in a foreign country to offer bribes to suppliers or government officials if it is an acceptable business practice in the foreign country?

36. A story on 60 Minutes highlighted the widespread practice of automotive service businesses attempting to sell customers unneeded parts and services. What are the ethical issues involved? Who are the stakeholders?

37. As an engineer with a multinational aerospace firm, you become aware of a potential defect in an airplane engine part. Your tests indicate that at low temperatures, a seal may leak, allowing hot gases from the engine to ignite. Although the risks of such a leak are very low, the consequences are potentially disastrous. What ethical issues are involved? Who are the stakeholders? What should the manager do?

38. Veda Inc. produces batteries for riding lawn mowers. The company provides the batteries to some of the largest manufacturers of riding lawn mowers in the United States. In the last few months, the company has received reports of batteries exploding from high heat. The incidents have all been in southern states and have occurred with only one particular brand and model of lawn mower. In these models, the batteries are installed beneath the seats of the mower. In more than one case, the exploding batteries have resulted in serious injuries to operators of the lawn mowers. Company officials are aware of the potential danger but have been unable to pinpoint the problem. Some company officials think that the problem may be with the lawn mower and not with the batteries. Internal testing has been inconclusive.

Required

A. Comment on the responsibility the company should take for the potential danger of the battery exploding.

B. Should company management try to shift blame to the manufacturer of the lawn mower, as the problems are only with one particular brand of mower?

C. Discuss the ethical considerations involved with this situation.