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CORNERSTONES

of Cost Management

HANSEN  **MOWEN**

Cornerstones

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FOURTH EDITION

CORNERSTONES OF COST MANAGEMENT

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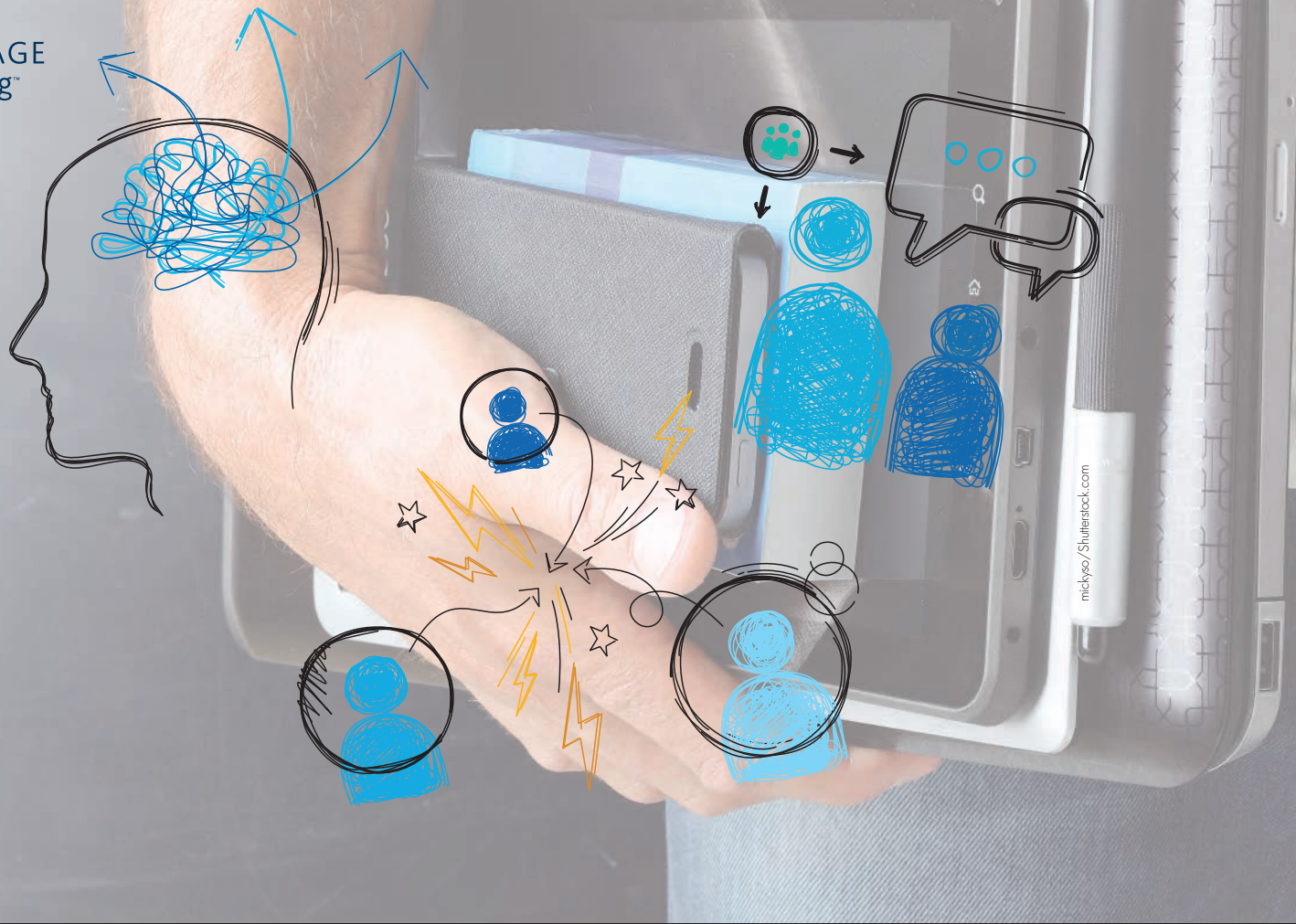
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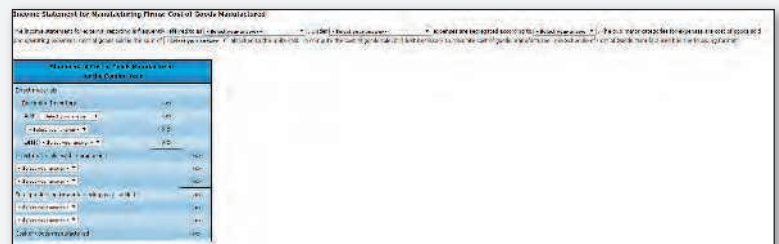
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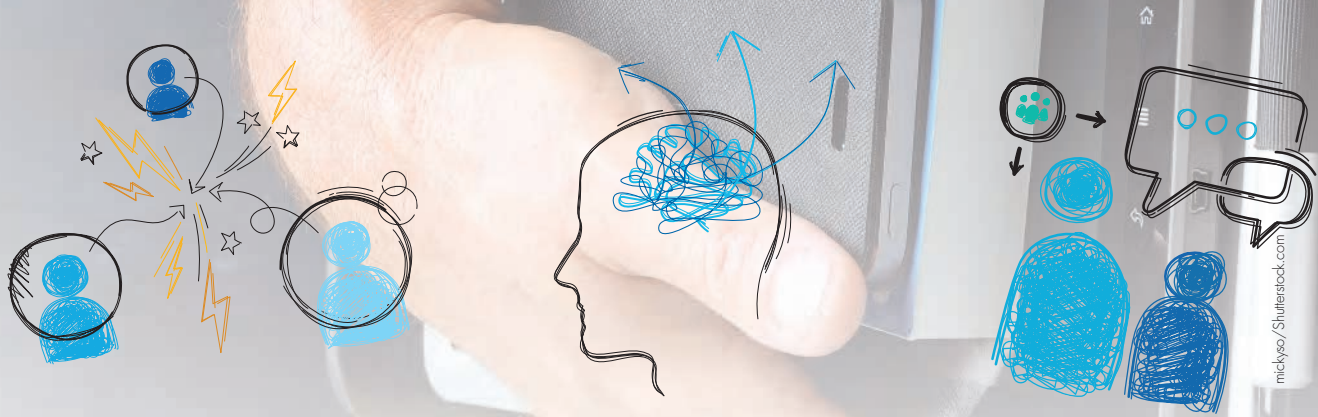
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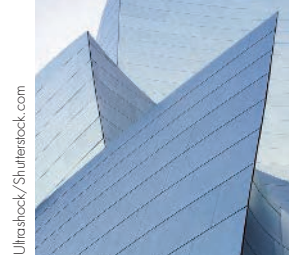
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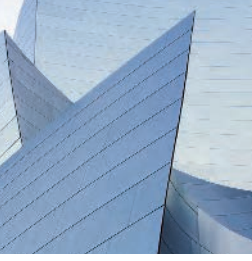
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KEY CHANGES TO THIS EDITION

Two new themes have been woven into each chapter – Sustainability and Big Data. These are detailed in the chapter-by-chapter listing below.

All chapters have an End of Chapter segment with questions typical of questions used on professional certification exams. This will give students confidence in preparing for cost accounting material on the various certification exams.

Chapter 1: Introduction to Cost Management

1. Expanded the Advances in Information Technology Section with a section on Big Data.
2. Added a section on Sustainable Development.
3. Added a Real World Example (box) on sustainable development for a company that improved both environmental and economic performance.

Chapter 2: Basic Cost Management Concepts

1. Updated Real World Example box on McDonald's menu changes.
2. Added a Real World Example box on the role of cost accountants in using Big Data to effect business change.
3. Added a Real World Example box on the use of sustainable development by school districts to reduce energy consumption/cost without degrading the student/teacher experience.

Chapter 3: Cost Behavior

1. Simplified exposition of standard errors and goodness-of-fit for students by removing section on calculation of confidence intervals. Emphasis is on conceptual use of goodness of fit rather than calculation of confidence intervals.
2. Added a Real World Example box on Sustainability and Big Data use by utility companies as they switch from analog to smart meters. This change has effected behavioral change by consumers as they gain increased understanding of energy usage.

Chapter 4: Activity-Based Costing

1. Added a Real World Example that illustrates how DHL used Big Data and ABC to improve its costing and pricing system.
2. Added a section and a new cornerstone on Duration Based Costing.

3. Added a new cornerstone exercise covering Duration-Based Costing (DBC) in the EOC materials.
4. Added a new exercise covering Duration-Based Costing (DBC)

Chapter 5: Product and Service Costing: Job-Order System

1. Added a Real World Example on using Big Data
2. Added a Real World Example on Sustainability as companies reduce resource use (raw materials, supplies, energy, or transportation/distribution) through the employment of additive manufacturing.

Chapter 6: Process Costing

1. Added a Real World Example on using Big Data to increase output for process manufacturing.

Chapter 7: Allocating Costs of Support Departments and Joint Products

1. Added a Real World Example on using Big Data analysis to integrate data files across various support departments to reduce cost and improve customer service.
2. Added a Real World Example on Sustainability by a meat processing plant that uses by-products to reduce waste and create energy.

Chapter 8: Budgeting for Planning and Control

1. Added a Real World Example on using Big Data from point of sale (POS) terminals to create data that are used for inventory management and to track customer preferences for budgeting.
2. Added a Real World Example on Sustainability goals and budgeting done by 3M Corporation to develop and track goals reduce waste and improve energy efficiency.

Chapter 9: Standard Costing: A Functional-Based Control Approach

1. Added a Real World Example on the use of Big Data by the National Restaurant Association to develop an automated food waste monitoring system.
2. Added a Real World Example on Sustainability in the restaurant industry. Food waste is a significant problem for this industry, standards are set to reduce waste and cost.

Chapter 10: Decentralization: Responsibility Accounting, Performance Evaluation, and Transfer Pricing

1. Added a Real World Example on using Big Data by professional golfers as they use data analytics of all shots taken on each PGA Tour event hole to determine the best approach to each shot.
2. Added a Real World Example on Sustainability by P&G through its setting of objectives in four major areas of emphasis: preservation of resources, renewable resources, worth from waste, and social programs.

Chapter 11: Strategic Cost Management

1. Added a Real World Example for Big Data that shows its use facilitates the use of ABC to assess and increase customer profitability.

Chapter 12: Activity-Based Management

1. Added a Real World Example on Sustainability that illustrates how Dow Terneuzen used activity management to reduce costs and, at the same time, improve environmental performance.
2. Added a Real world example on how a steel company used Big Data to enhance its Kaizen efforts.

Chapter 13: The Balanced Scorecard: Strategic-Based Control

1. Added a Real World Example that illustrates that Royal Dutch Shell integrated sustainability objectives and measures into the traditional four perspectives.

Chapter 14: Quality and Environmental Cost Management

1. Added a Real World Example that describes five ways Big Data can impact quality management.
2. Updated winners of the Baldrige Award.

Chapter 15: Lean Accounting and Productivity Measurement

1. Added a Real World Example on Intel's use of Big Data to improve productivity and quality.

2. Updated list to reflect more recent Shingo Prize Recipients.
3. Added a reference to DBC as a method to use for Value-Stream Costing.

Chapter 16: Cost-Volume-Profit Analysis

1. Added a Real World Example on the use of Big Data by telecommunication firms to determine probability of service interruptions and use of bandwidth to forecast future needs.
2. Added a Real World Example on Sustainability use by Best Buy, Inc., to determine the breakeven point in recycling of used electronics.

Chapter 17: Activity Resource Usage Model and Tactical Decision Making

1. Added a Real World Example on using Big Data and printing on demand technology to improve profitability of the corner bookstore.
2. Added a Real World Example on Sustainability efforts by Ford as it increases the use of recycled, renewable, and lightweight materials in its vehicles.

Chapter 18: Pricing and Profitability Analysis

1. Added a Real World Example on the use of Big Data by large hotel chains to find and satisfy their most loyal, profitable customers.
2. Added a Real World Example on Sustainability and the importance of long-term costs and benefits in explaining pricing for home solar installations.

Chapter 19: Capital Investment

1. Added a Real World Example Box for Big Data that describes how its use can improve capital budgeting decisions.

Chapter 20: Inventory Management: Economic Order Quantity, JIT, and the Theory of Constraints

1. Added a Real World Example Box that shows how Tesco, a large grocery and merchandiser retailers used Big Data to improve its inventory practices.



CHAPTER

1

After studying this chapter, you should be able to:

- 1 Describe cost management and explain how it differs from financial accounting.
- 2 Identify the current factors affecting cost management.
- 3 Describe how management accountants function within an organization.
- 4 Understand the importance of ethical behavior for management accountants.
- 5 Identify the three forms of certification available to internal accountants.

Introduction to Cost Management

FINANCIAL ACCOUNTING VERSUS COST MANAGEMENT: A SYSTEMS FRAMEWORK

A systems framework helps us understand the variety of topics that appear in the field of cost management. It also facilitates our ability to understand the differences between financial accounting and cost management. An **accounting information system** consists of interrelated manual and computer parts and uses processes such as collecting, recording, summarizing, analyzing, and managing data to transform inputs into information that is provided to users.

The accounting information system within an organization has two major subsystems: (1) *the financial accounting information system* and

OBJECTIVE 1

Describe cost management and explain how it differs from financial accounting.

(2) *the cost management accounting information system*. One of the major differences between the two systems is the targeted user.

Financial Accounting Information System

The **financial accounting** information system is primarily concerned with producing outputs for external users. It uses well-specified economic events as inputs, and its processes follow certain rules and conventions. For financial accounting, the nature of the inputs and the rules and conventions governing processes are defined by the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB). Among its outputs are financial statements such as the balance sheet, income statement, and statement of cash flows for external users (investors, creditors, government agencies, and other outside users). Financial accounting information is used for investment decisions, stewardship evaluation, activity monitoring, and regulatory measures.

The Cost Management Information System

The **cost management** information system is primarily concerned with producing outputs for internal users using inputs and processes needed to satisfy management objectives. The cost management information system is not bound by externally imposed criteria that define inputs and processes. Instead, the criteria that govern the inputs and processes are set by people in the company. The cost management information system has three broad objectives that provide information for:

1. Costing out services, products, and other objects of interest to management
2. Planning and control
3. Decision making

The information requirements for satisfying the first objective depend on the nature of the object being costed and the reason management wants to know the cost. For example, product costs that satisfy the FASB rules are needed to value inventories for the balance sheet and to calculate the cost of goods sold expense on the income statement. These product costs include the cost of materials, labor, and overhead. In other cases, managers may want to know all costs that are associated with a product for purposes of tactical and strategic profitability analysis. If so, then additional cost information may be needed concerning product design, development, marketing, and distribution. For example, pharmaceutical companies may want to associate research and development costs with individual drugs or drug families.

Cost information is also used for planning and control. It should help managers decide what should be done, why it should be done, how it should be done, and how well it is being done. For example, information about the expected revenues and costs for a new product could be used as an input for target costing. At this stage, the expected revenues and costs may cover the entire life of the new product. Thus, projected costs of design, development, testing, production, marketing, distribution, and servicing would be essential information.

Finally, cost information is a critical input for many managerial decisions. For example, a manager may need to decide whether to continue making a component internally or to buy it from an external supplier. In this case, the manager would need to know the cost of materials, labor, and other productive inputs associated with the manufacture of the component and which of these costs would vanish if the product is no longer produced. Also needed is information concerning the cost of purchasing the component, including any increase in cost for internal activities such as receiving and storing goods.

Cost management has a much broader focus than that found in traditional costing systems. It is concerned not only with how much something costs but also with the factors that drive costs, such as cycle time, quality, and process productivity. Thus, cost management requires a deep understanding of a firm's cost structure. Managers must be able to determine the long- and short-run costs of activities and processes as well as the costs of goods, services, customers, suppliers, and other objects of interest. Causes of these costs are also carefully studied.

Different Systems for Different Purposes

The financial accounting and cost management systems show us that different systems exist to satisfy different purposes. As indicated, these two systems are subsystems of the accounting information system. The cost management information system also has two major subsystems: the *cost accounting information system* and the *operational control information system*. The objectives of these two subsystems correspond to the first and second objectives mentioned earlier for the cost management information system (the costing and control objectives). The output of these two cost systems satisfies the third objective (the decision-making objective).

The **cost accounting information system** is a cost management subsystem designed to assign costs to individual products and services and other objects as specified by management. For external financial reporting, the cost accounting system must assign costs to products in order to value inventories and determine cost of sales. Furthermore, these assignments must conform to the rules and conventions set by the SEC and the FASB. These rules and conventions do not require that all costs assigned to individual products be causally related to the demands of individual products. Thus, using financial accounting principles to define product costs may lead to under- and overstatements of individual product costs. For reporting inventory values and cost of sales, this may not matter. Inventory values and cost of sales are reported in the aggregate, and the under- and overstatements may wash out to the extent that the values reported on the financial statements are reasonably accurate.

At the individual product level, however, distorted product costs can cause managers to make significant decision errors. For example, a manager might erroneously deemphasize and overprice a product that is, in reality, highly profitable. For decision making, accurate product costs are needed. If possible, the cost accounting system should produce product costs that simultaneously are accurate and satisfy financial reporting conventions. If not, then the cost system must produce two sets of product costs: one that satisfies financial reporting criteria and one that satisfies management decision-making needs.

The **operational control information system** is a cost management subsystem designed to provide accurate and timely feedback concerning the performance of managers and others relative to their planning and control of activities. Operational control is concerned with what activities should be performed and assessing how well they are performed. It focuses on identifying opportunities for improvement and helping to find ways to improve. A good operational control information system provides information that helps managers engage in a program of continuous improvement of all aspects of their businesses.

Product cost information plays a role in this process but, by itself, is not sufficient. The information needed for planning and control is broader and encompasses the entire value chain. For example, every profit-making manufacturing and service organization exists to serve customers. Thus, one objective of an operational control system is to improve the value received by customers. Products and services should be produced that fit specific customer needs. (Observe how this affects the design and development system in the value chain.) Quality, affordable prices, and low post-purchase costs for operating and maintaining the product are also important to customers.

A second, related objective is to improve profits by providing this value. Well-designed, quality products that are affordable can be offered only if they also provide an acceptable return to the owners of the company. Cost information concerning quality, different product designs, and post-purchase customer needs is vital for managerial planning and control.

OBJECTIVE 2

Identify the current factors affecting cost management.

FACTORS AFFECTING COST MANAGEMENT

Worldwide competitive pressures, deregulation, growth in the service industry, and advances in information and manufacturing technology have changed the nature of our economy and caused many manufacturing and service industries to dramatically change the way in which they operate. These changes, in turn, have prompted the development of innovative and relevant cost management practices. For example, activity-based accounting systems have been developed and implemented in many organizations. Additionally, the focus of cost management accounting systems has been broadened to enable managers to better serve the needs of customers and manage the firm's business processes that are used to create customer value. A firm can establish a competitive advantage by providing more customer value for less cost than its competitors. To secure and maintain a competitive advantage, managers seek to improve time-based performance, quality, and efficiency. Accounting information must be produced to support these three fundamental organizational goals.

Global Competition

Vastly improved transportation and communication systems have led to a global market for many manufacturing and service firms. Several decades ago, firms neither knew nor cared what similar firms in Japan, Brazil, Germany, and China were producing. These foreign firms were not competitors since their markets were separated by geographical distance. Now, both small and large firms are affected by the opportunities offered by global competition. [Stillwater Designs](#), a small firm that designs and markets Kicker speakers, has significant markets in Europe. The manufacture of the Kicker speakers is mostly outsourced to Asian producers. At the other end of the size scale, [Procter & Gamble](#), [The Coca-Cola Company](#), and [Mars, Incorporated](#) are developing sizable markets in China. Automobiles, currently being made in Japan, can be in the United States in two weeks. Investment bankers and management consultants can communicate with foreign offices instantly. Improved transportation and communication in conjunction with higher quality products that carry lower prices have upped the ante for all firms. This global competitive environment has increased the demand not only for more cost information but also for more accurate cost information. Cost information plays a vital role in reducing costs, improving productivity, and assessing product-line profitability.

Growth of the Service Industry

As traditional industries have declined in importance, the service sector of the economy has increased in importance. The service sector now comprises approximately three quarters of the U.S. economy and employment. Many services—among them accounting services, transportation, telecommunications, and medical services—are exported to other countries such as India and Argentina. Experts predict that this sector will continue to expand in size and importance as service productivity grows. Deregulation of many services (e.g., airlines and telecommunications in the past and utilities in the present) has increased competition in the service industry. Many service organizations are scrambling to survive. The increased competition has made managers in this industry

more conscious of the need to have accurate cost information for planning, controlling, continuous improvement, and decision making. Thus, the changes in the service sector add to the demand for innovative and relevant cost management information.

Advances in Information Technology

Four significant advances relate to information technology. One is intimately connected with computer-integrated applications. With automated manufacturing, computers are used to monitor and control operations. Because a computer is being used, a considerable amount of useful information can be collected, and managers can be informed about what is happening within an organization almost as it happens. It is now possible to track products continuously as they move through the factory and to report (on a real-time basis) such information as units produced, material used, scrap generated, and product cost. The outcome is an operational information system that fully integrates manufacturing with marketing and accounting data.

Enterprise resource planning (ERP) software has the objective of providing an integrated system capability—a system that can run all the operations of a company and provide access to real-time data from the various functional areas of a company. Using this real-time data enables managers to continuously improve the efficiency of organizational units and processes. To support continuous improvement, information that is timely, accurate, and detailed is needed.

Automation and integration increase both the quantity (detail) and the timeliness of information. For managers to fully exploit the value of the more complex information system, they must have access to the data of the system—they must be able to extract and analyze the data from the information system quickly and efficiently. This, in turn, implies that the tools for analysis must be powerful.

The second major advance supplies the required tools: the availability of personal computers (PCs), online analytic programs (OLAP), and decision-support systems (DSS). The PC serves as a communications link to the company's information system, and OLAP and DSS supply managers with the capability to use that information. PCs and software aids are available to managers in all types of organizations. Often, a PC acts as a networking terminal and is connected to an organization's database, allowing managers to access information more quickly, do their own analyses, and prepare many of their own reports. The ability to enhance the accuracy of product costing is now available. Because of advances in information technology, cost accountants have the flexibility to respond to the managerial need for more complex product costing methods such as activity-based costing (ABC). Even with the information technology, however, many firms have not embraced ABC because of its cost and complexity. Simplified and improved costing systems such as time-driven activity-based costing (TDABC) have been developed in order to deal with these issues, while preserving the benefits of enhanced accuracy.

ABC software is classified as online analytic software. Online analytic applications function independently of an organization's core transactions but at the same time are dependent on the data resident in an ERP system. ABC software typically interfaces with DSS software and other online analytic software to facilitate applications such as cost estimating, product pricing, and planning and budgeting. This vast computing capability now makes it possible for accountants to generate individualized reports on an as-needed basis. Many firms have found that the increased responsiveness of a contemporary cost management system has allowed them to realize significant cost savings by eliminating the huge volume of internally generated monthly financial reports.

The third major advance is the development of business analytics (related to or synonymous with Big Data or data analytics). One of the key differences between this third advance in information technology and the second advance just discussed is the expansion of business analytics to include external data sets and, at the same time, integrate the analysis with an organization's internal databases. Another key difference is the

emergence of very large data sets—data sets so large that they exceed the ability of commonly used software to capture and analyze the relationships (hence the Big Data label that has become popular). Analyzing these big data sets may provide significant insights that will allow companies to do such things as reduce costs, improve quality, decrease cycle times, detect fraudulent activity, and enhance decision making. As might be expected, software for analyzing big data sets has been developed by companies such as **Oracle** and **SAP**; moreover, software such as Microsoft Power BI and Tableau provides similar analytical capabilities for individuals, small businesses, and large businesses.

The fourth major advance is the emergence of electronic commerce. **Electronic commerce (e-commerce)** is any form of business that is executed using information and communications technology. Internet trading, electronic data interchange, and bar coding are examples of e-commerce. Internet trading allows buyers and sellers to come together and execute transactions from diverse locations and circumstances. Internet trading allows a company to act as a virtual organization, thus reducing overhead. **Electronic data interchange (EDI)** involves the exchange of documents between computers using telephone lines and is widely used for purchasing and distribution. The sharing of information among trading partners reduces costs and improves customer relations, thus leading to a stronger competitive position. EDI is an integral part of supply chain management (value-chain management). **Supply chain management** is the management of products and services from the acquisition of raw materials through manufacturing, warehousing, distribution, wholesaling, and retailing. The emergence of EDI and supply chain management has increased the importance of costing out activities in the value chain and determining the cost to the company of different suppliers and customers.

Advances in the Manufacturing Environment

Manufacturing management approaches such as the theory of constraints and just-in-time have allowed firms to increase quality, reduce inventories, eliminate waste, and reduce costs. Automated manufacturing has produced similar outcomes. The impact of improved manufacturing technology and practices on cost management is significant. Product costing systems, control systems, allocation, inventory management, cost structure, capital budgeting, variable costing, and many other accounting practices are being affected.

Theory of Constraints The **theory of constraints** is a method used to continuously improve manufacturing and nonmanufacturing activities. It is characterized as a “thinking process” that begins by recognizing that all resources are finite. Some resources, however, are more critical than others. The most critical limiting factor, called a constraint, becomes the focus of attention. By managing this constraint, performance can be improved. To manage the constraint, it must be identified and exploited (i.e., performance must be maximized subject to the constraint). All other actions are subordinate to the exploitation decision. Finally, to improve performance, the constraint must be elevated. The process is repeated until the constraint is eliminated (i.e., it is no longer the critical performance-limiting factor). The process then begins anew with the resource that has now become the critical limiting factor. Using this method, lead times and, thus, inventories can be reduced.

Just-in-Time Manufacturing A demand-pull system, **just-in-time (JIT) manufacturing**, strives to produce a product only when it is needed and only in the quantities demanded by customers. Demand, measured by customer orders, pulls products through the manufacturing process. Each operation produces only what is necessary to satisfy the demand of the succeeding operation. No production takes place until a signal from a succeeding process indicates the need to produce. Parts and materials arrive just in time to be used in production.

JIT manufacturing typically reduces inventories to much lower levels (theoretically to insignificant levels) than those found in conventional systems, increases the emphasis on quality control, and produces fundamental changes in the way production is organized and carried out. Basically, JIT manufacturing focuses on continual improvement by reducing inventory costs and dealing with other economic problems. Reducing inventories frees up capital that can be used for more productive investments. Increasing quality enhances the competitive ability of the firm. Finally, changing from a traditional manufacturing setup to JIT manufacturing allows the firm to focus more on quality and productivity and, at the same time, allows a more accurate assessment of what it costs to produce products.

Lean Manufacturing JIT is a critical part of a more comprehensive approach referred to as *lean manufacturing*. **Lean manufacturing** is the persistent pursuit and elimination of waste that simultaneously embodies respect for people. Waste is anything that does not add value to the end user (customer). As a result of eliminating waste, lead time is decreased, production processes are streamlined, and costs are decreased. Depending on the nature of the value streams created in lean manufacturing, a more accurate assessment of product costs may result.

Computer-Integrated Manufacturing Automation of the manufacturing environment allows firms to reduce inventory, increase productive capacity, improve quality and service, decrease processing time, and increase output. Automation can produce a competitive advantage for a firm. The implementation of an automated manufacturing facility typically follows JIT and is a response to the increased needs for quality and shorter response times. As more firms automate, competitive pressures will force other firms to do likewise. For many manufacturing firms, automation may be equivalent to survival.

The three possible levels of automation are (1) the stand-alone piece of equipment, (2) the cell, and (3) the completely integrated factory. Before a firm attempts any level of automation, it should first do all it can to produce a more focused, simplified manufacturing process. For example, most of the benefits of going to a completely integrated factory can often be achieved simply by implementing JIT manufacturing.

If automation is justified, it may mean installation of a computer-integrated manufacturing (CIM) system. CIM implies the following capabilities: (1) the products are designed through the use of a computer-assisted design (CAD) system, (2) a computer-assisted engineering (CAE) system is used to test the design, (3) the product is manufactured using a computer-assisted manufacturing (CAM) system (CAMs use computer-controlled machines and robots), and (4) an information system connects the various automated components.

A particular type of CAM is the flexible manufacturing system. Flexible manufacturing systems are capable of producing a family of products from start to finish using robots and other automated equipment under the control of a mainframe computer. This ability to produce a variety of products with the same set of equipment is clearly advantageous.

Customer Orientation

Firms are concentrating on the delivery of value to the customer with the objective of establishing a competitive advantage. Accountants and managers refer to a firm's **value chain** as the set of activities required to design, develop, produce, market, and deliver products and services to customers. As a result, a key question to be asked about any process or activity is whether it is important to the customer. The cost management system must track information relating to a wide variety of activities important to customers (e.g., product quality, environmental performance, new product development, and delivery performance). Customers now count the delivery of the product or service as part of the product. Companies must compete not only in technological and

manufacturing terms but also in terms of the speed of delivery and response. Firms such as [FedEx](#) have exploited this desire by identifying and developing a market the [U.S. Postal Service](#) could not serve.

Companies have internal customers as well. The staff functions of a company exist to serve the line functions. The accounting department creates cost reports for production managers. Accounting departments that are “customer driven” assess the value of the reports to be sure that they communicate significant information in a timely and readable fashion. Reports that do not measure up are dropped.

New Product Development

A high proportion of production costs is committed during the development and design stage of new products. The effects of product development decisions on other parts of the firm’s value chain are now widely acknowledged. This recognition has produced a demand for more sophisticated cost management procedures relating to new product development—procedures such as target costing and activity-based management. **Target costing** encourages managers to assess the overall cost impact of product designs over the product’s life cycle and simultaneously provides incentives to make design changes to reduce costs. **Activity-based management** identifies the activities produced at each stage of the development process and assesses their costs. Activity-based management is complimentary to target costing because it enables managers to identify the activities that do not add value and then eliminate them so that overall life cycle costs can be reduced.

Sustainable Development

Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Although absolute sustainability may not be attainable, progress toward its achievement certainly seems to have some merit. Many firms have discovered that paying attention to the environment can be economically beneficial—that it is possible to prevent pollution, reduce waste discharges, and reduce the dispersion of toxic substances while simultaneously increasing profits.



REAL-WORLD
EXAMPLE

Sustainability

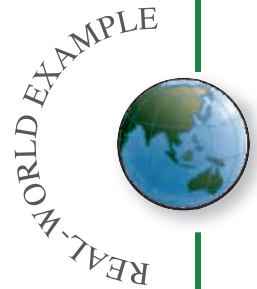
[Ricoh Company, Ltd.](#) is a multinational company headquartered in Japan. Ricoh produces cameras and office imaging equipment such as multifunction printers, copiers, laser printers, scanners, and digital duplicators. The company has earned a strong reputation for corporate social responsibility. In 2016, the Environmental Protection Agency selected Ricoh to receive the ENERGY STAR Partner of the Year Award. This award recognized Ricoh for its success in reducing greenhouse emissions by producing energy-efficient products. Ricoh is a good example of a company that has managed to balance environmental performance and economic performance. For example, in its 2010 Sustainability Report, Ricoh reported an Eco-Profit Ratio of 1.6 [Eco-Profit Ratio = (Total Economic Benefit)/(Total Environmental Conservation Cost)].

A positive relationship between environmental performance and economic performance provides a much different view than the traditional view. Under this new view, environmental pollution and contamination are a type of economic inefficiency, and therefore, efforts to enhance environmental quality improve a firm's profitability. Environmental managerial accounting can provide information vital to measuring the effects of environmental initiatives.

Total Quality Management

Continuous improvement and elimination of waste are the two foundation principles that govern a state of manufacturing excellence. Manufacturing excellence is the key to survival in today's world-class competitive environment. Producing products and services that actually perform according to specifications¹ and with little waste are the twin objectives of world-class firms. A philosophy of **total quality management**, in which managers strive to create an environment that will enable organizations to produce defect-free products and services, has replaced the acceptable quality attitudes of the past. The emphasis on quality applies to services as well as products.

Advocate Good Samaritan Hospital is an acute care facility located in Downers Grove, Illinois. In 2010, Good Samaritan received the Malcolm Baldrige National Quality Award in the health care category. This award is presented to organizations that demonstrate quality and performance excellence. Good Samaritan Hospital improved its mortality rate (actual mortality/expected mortality) from 0.73 in 2004 to 0.25 in 2010. Furthermore, the ratio of observed to expected renal failures decreased from 3.0 in 2007 to 0.86 in 2009. By creating a culture of patient safety, Good Samaritan Hospital decreased its malpractice expenses by 83 percent from 2005 to 2010, saving \$10 million.



The message is clear. Pursuing an objective of high quality promises major benefits. Cost management supports this objective by providing crucial information concerning quality-related activities and quality costs. Savings associated with quality initiatives can be reported as well. Managers need to know which quality-related activities add value and which ones do not. They also need to know what quality costs are and how they change over time.

Time as a Competitive Element

Time is a crucial element in all phases of the value chain. Firms can reduce time to market by redesigning products and processes, by eliminating waste, and by eliminating non-value-added activities. Firms can reduce the time spent on delivery of products or services, reworking a product, and unnecessary movements of materials and subassemblies.

Decreasing non-value-added time appears to go hand in hand with increasing quality. With quality improvements, the need for rework decreases, and the time to produce a good product decreases. The overall objective is to increase customer responsiveness.

¹ As reported at http://www.nist.gov/baldrige/award_recipients/good-samaritan_profile.cfm on August 1, 2011.