alt Disney clearly put us on the path toward things like quality, great guest service, creativity and innovation," said Mr. Bruce Jones, programming director for the Disney Institute. Disney theme parks and resorts are designed to "create happiness by providing the finest in entertainment for people of all ages, everywhere." How do they accomplish this? By meticulous attention to the management of operations! Disney theme parks and resorts, for example, focus on training employees ("cast members") to provide exceptional guest service; on the use of technology both for entertainment and operational efficiency; on the physical setting (i.e., facility layout, lighting, signage, music, appealing to all five senses), separating "onstage" public areas from "backstage" work operations that include a complex underground system to move materials and people around the properties; on process design issues like efficient waiting lines—and on continuous improvement of everything they do.1

What do you think?

Describe one experience you had at a theme park that illustrates either good or bad customer service or operational design. What can we learn from your experience regarding how a theme park can create a positive customer experience or improve on a bad one through its design and operations?

Learning outcomes

After studying this chapter you should be able to:

LO1 Explain the concept of operations management.
LO2 Describe what operations managers do.
LO3 Explain the differences between goods and services.
LO4 Describe a customer benefit package.
LO5 Explain three general types of processes.
LO6 Summarize the historical development of OM.
LO7 Describe current challenges facing OM.
Operations management (OM) is the science and art of ensuring that goods and services are created and delivered successfully to customers. Applying the principles of OM entails a solid understanding of people, processes, and technology, and how they are integrated within business systems to create value.

The opening description of Disney illustrates a key theme of this book—the importance of the design and management of operations for creating goods and services that are valued by customers and society. The way in which goods and services, and the “processes” that create and support them, are designed and managed can make the difference between a delightful or unhappy customer experience.

Operations management is the only function by which managers can directly affect the value provided to all stakeholders—customers, employees, investors, and society. Effective operations management is essential to providing high-quality goods and services that customers demand, motivating and developing the skills of the people who actually do the work, maintaining efficient operations to ensure an adequate return on investment, and protecting the environment.
Applying the principles of OM entails a solid understanding of people, processes, and technology, and how they are integrated within business systems to create value.

OM in the Workplace
You need not have the title of “operations manager” to “do operations management.” Every job entails some aspects of operations management. The ideas and methods of operations management will help you get things done successfully regardless of your functional area of business or industry. As you manage business functions such as accounting, human resource management, legal, financial, operations, supply chain, environment, service, or marketing processes, you create value for your internal customers (within the organization) and for your external customers (outside the organization). Everyone who manages a process or some business activity should possess a set of basic OM skills.

Alaska Airlines’ Airport of the Future
At many airports, the passenger check-in area often resembles a mob scene. Passengers queue up in long lines, customers waiting for agents block self-serve kiosks, and finished passengers must push through the crowd again. The process often takes 25–30 minutes.

But at Alaska Airlines, employees roam a spacious hall, directing customers toward kiosks. Lines aren’t more than three-people deep, and travelers are on their way to security in eight minutes or less.

Moving customers from frustration to relief—in a fraction of the time—has been at the focus of Alaska Airlines’ Airport of the Future project. The carrier has spent more than a decade designing a better way to get customers through airport check-in. Alaska’s embrace of the future came out of necessity. By the mid-1990s, it was running out of space to handle its Seattle passengers. A new terminal would have cost around $500 million. Alaska tried self-serve kiosks, but technology alone wasn’t the answer. Kiosks were pushed against the ticket counter, which only slowed the flow of passengers. The airline assembled a team of employees from across the company and visited theme parks, hospitals, and retailers to see what it could learn. Similar to Disneyland, Alaska placed “lobby coordinators” out front to help educate travelers. The bag-drop stations are further back and arranged so that passengers can see security. Other airlines’ agents lose precious time hauling bags and walking the length of the ticket counter to reach customers. Alaska agents stand at a station with baggage conveyor belts on each side, assisting one passenger while a second traveler places luggage on the free belt. With just a slight turn, the agent can assist the next customer. The project has significantly reduced customer wait times and increased agent productivity.

Operations management is an integrative and interdisciplinary body of knowledge. OM skills are needed in industries as diverse as health care, education, telecommunications, lodging, food service, banking, consulting, and manufacturing.

Below are some other examples of how former students are using OM in their jobs.

Teresa Louis was an accounting major in college and started her career at Chiquita Brands in a division that produces and sells fruit ingredients such as banana puree, frozen sliced bananas, and other types of fruit products. Although her primary job title is accountant and she is involved in monthly accounting closings and
What Do Operations Managers Do?

Some of the key activities that operations managers do include:

- Translating market knowledge of customers to design and manage goods, services, and processes.
- Helping organizations do more with less.
- Ensuring that resources (labor, equipment, materials, and information) and operations are coordinated.
- Exploiting technology to improve productivity.
- Building quality into goods, services, and processes.
- Determining resource capacity and schedules.
- Creating a high-performance workplace.
- Continually learning and adapting the organization to global and environmental changes.

United Performance Metals

United Performance Metals, formerly known as Ferguson Metals, located in Hamilton, Ohio, is a supplier of stainless steel and high-temperature alloys for the specialty metal market. Ferguson’s primary production operations include slitting coil stock and cutting sheet steel to customer specifications with rapid turnaround times from order to delivery. Bob Vogel is the Director of Operations and Quality at Ferguson. With only 78 employees, about half of whom are in operations, Bob is involved in a variety of daily activities that draw upon knowledge of not only OM and engineering, but also finance, accounting, organizational behavior, and other subjects. He typically spends about 50 percent of his time working with foremen, supervisors, salespeople, and other staff through email and various meetings, discussing such issues as whether or not the company has the capability to accomplish a specific customer request, as well as routine production, quality, and shipping issues. While he makes recommendations to his direct reports, his interaction is more of a consultant than a manager; his people are fully empowered to make key decisions. The remainder of his time is spent investigating such issues as the technical feasibility and cost implications of new capital equipment or changes to existing processes, trying to reduce costs, seeking and facilitating design improvements on the shop floor, and motivating the work force. For example, one project involves working with the Information Technology group to reduce the amount of paperwork required to process orders. While understanding specialty metals is certainly a vital part of his job, the ability to understand customer needs, apply approaches to continuous improvement, understand and motivate people, work cross-functionally across the business, and integrate processes and technology define Bob’s job as an operations manager. In 2008, the company merged with AIM International as United Performance Metals.

Other accounting tasks, Teresa uses OM skills to support her work. These include:

- **Quality and customer service issues:** If there is a quality issue with a product either at the plant level or the customer level, the accounting group has to account for it in the Inventory Reserve account, which is reconciled during the closing process.

- **Performance measurement and evaluation:** Part of Teresa’s responsibility is to look at the monthly profit versus cost analysis by product to calculate a net contribution. She examines the product costs at the plant level to find more efficient and cost-effective methods of production. An example is to increase efficiency by reducing plant down-times, which increases the price per pound of the product. To find more cost-effective methods of producing the product, the biggest area is in constantly looking for better/cheaper fruit sourcing suppliers.
A **good** is a physical product that you can see, touch, or possibly consume. A **durable good** is a product that typically lasts at least three years. A **nondurable good** is perishable and generally lasts for less than three years. A **service** is any primary or complementary activity that does not directly produce a physical product.

1. **Goods are tangible while services are intangible.**

Goods are consumed, but services are experienced. Goods-producing industries rely on machines and “hard technology” to perform work. Goods can be moved, stored, and repaired, and generally require physical skills and expertise during production. Customers can often try them before buying. Services, on the other hand, make more use of information systems and other “soft technology,” require strong behavioral skills, and are often difficult to describe and demonstrate. A senior executive of the Hilton Corporation stated, “We sell time. You can’t put a hotel room on the shelf.”

**Managing inventory:** Part of the closing process is to reconcile the Inventory Movement because inventory is what drives the fruit commodity business. It is very important to make sure inventory balances and levels are accurate as this is what the percentage of sales is based on. She is also involved in ensuring inventory accuracy at the company’s distribution centers.

Tom James is a senior software developer for a small software development company that creates sales proposal automation software. Tom uses OM skills in dealing with quality and customer service issues related to the software products he is involved in developing. He is also extensively involved in project management activities related to the development process, including identifying tasks, assigning developers to tasks, estimating the time and cost to complete projects, and studying the variance between the estimated and actual time it took to complete the project. He is also involved in continuous improvement projects; for example, he seeks to reduce development time and increase the efficiency of the development team. Tom was an information technology and management major in college.

Brooke Wilson is a process manager for JPMorgan Chase in the credit card division. After several years working as an operations analyst, he was promoted to a production supervisor position overseeing “plastic card production.” Among his OM-related activities are:

- **Planning and budgeting:** Representing the plastic card production area in all meetings, developing annual budgets and staffing plans, and watching technology that might affect the production of plastic credit cards.
- **Inventory management:** Overseeing the management of inventory for items such as plastic blank cards, inserts such as advertisements, envelopes, postage, and credit card rules and disclosure inserts.
- **Scheduling and capacity:** Daily to annual scheduling of all resources (equipment, people, inventory) necessary to issue new credit cards and reissue cards that are up for renewal, replace old or damaged cards, as well as cards that are stolen.
- **Quality:** Embossing the card with accurate customer information and quickly getting the card in the hands of the customer.

Brooke was an accounting major in college.
A senior executive of the Hilton Corporation stated, “We sell time. You can’t put a hotel room on the shelf.”

2. **Customers participate in many service processes, activities, and transactions.** Many services require that the customer be present either physically, on a telephone, or online for service to commence. In addition, the customer and service-provider often co-produce a service, meaning that they work together to create and simultaneously consume the service, as would be the case between a bank teller and a customer to complete a financial transaction.

   This characteristic has interesting implications for operations. For example, it might be possible to off-load some work to the customer by encouraging self-service (supermarkets, cafeterias, libraries) and self-cleanup (fast-food restaurants, campgrounds, vacation home rentals). The higher the customer participation, the more uncertainty the firm has with respect to service time, capacity, scheduling, quality performance, and operating cost.

Customers judge the value of a service and form perceptions through service encounters.

A **service encounter** is an interaction between the customer and the service provider. Service encounters consist of one or more **moments of truth**—any episodes, transactions, or experiences in which a customer comes into contact with any aspect of the delivery system, however remote, and thereby has an opportunity to form an impression. Employees who interact directly with customers, such as airline flight attendants, nurses, lawyers, fast-food counter employees, telephone customer service representatives, dentists, and bank tellers need to understand the importance of service encounters to their customers. Customers judge the value of a service and form perceptions through service encounters.

3. **The demand for services is more difficult to predict than the demand for goods.** Customer arrival rates and demand patterns for such service delivery systems as banks, airlines, supermarkets, telephone service centers, and courts are very difficult to forecast. The demand for services is time-dependent, especially over the short term (by hour or day). This places many pressures on service firm managers to adequately plan staffing levels and capacity.

4. **Services cannot be stored as physical inventory.** In goods-producing firms, inventory can be used to decouple customer demand from the production process or between stages of the production process and ensure constant availability despite fluctuations in demand. Service firms do not have physical inventory to absorb such fluctuations in demand. For service delivery systems, availability depends on the system’s capacity. For example, a hospital must have an adequate supply of beds for the purpose of meeting unanticipated patient demand, and a float pool of nurses when things get very busy. Once an airline seat, a hotel room, or an hour of a lawyer’s day are gone there is no way to recapture the lost revenue.

5. **Service management skills are paramount to a successful service encounter.** Service-providers require service management skills such as knowledge and technical expertise (operations), cross-selling other products and services (marketing), and good human interaction skills (human resource).

   **Service management** integrates marketing, human resource, and operations functions to plan, create, and deliver goods and services, and their associated service encounters. OM principles are useful in designing service encounters and supporting marketing objectives.

A **service encounter** is an interaction between the customer and the service provider.

**Moments of truth**—any episodes, transactions, or experiences in which a customer comes into contact with any aspect of the delivery system, however remote, and thereby has an opportunity to form an impression.
6. Service facilities typically need to be in close proximity to the customer. When customers must physically interact with a service facility, for example, post offices, hotels, and branch banks, they must be located convenient to customers. A manufacturing facility, on the other hand, can be located on the other side of the globe, as long as goods are delivered to customers in a timely fashion. In today’s Internet age and with evolving service technologies, “proximity” need not be the same as location; many services are only a few mouse clicks away.

7. Patents do not protect services. A patent on a physical good or software code can provide protection from competitors. The intangible nature of a service makes it more difficult to keep a competitor from copying a business concept, facility layout, or service encounter design. For example, restaurant chains are quick to copy new menu items or drive-through concepts.

These differences between goods and services have important implications to all areas of an organization, and especially to operations. These are summarized in Exhibit 1.1. Some are obvious, while others are more subtle. By understanding them, organizations can better select the appropriate mix of goods and services to meet customer needs and create the most effective operating systems to produce and deliver those goods and services.

A customer benefit package (CBP) is a clearly defined set of tangible (goods-content) and intangible (service-content) features that the customer recognizes, pays for, uses, or experiences. In simple terms, it is some combination of goods and services configured in a certain way to provide value to customers. A CBP consists of a primary good or service, coupled with peripheral goods and/or services, and sometimes variants. A primary good or service is the “core” offering that attracts customers and responds to their basic needs. For example, the primary service of a personal checking account is convenient financial transactions. Peripheral goods or services are those that are not essential to the primary good or service, but enhance it. A personal checking account might be supported and enhanced by such peripheral goods as a printed monthly account statement, designer checks and checkbooks, a special credit card, and such peripheral services as a customer service hotline and online bill payment. It is interesting to note that today, many business-to-business manufacturers, such as custom machining or metal fabricators, think of their core offering as service—providing customized design assistance and on-time delivery—with the actual good as peripheral. Finally, a variant is a CBP feature that departs from the standard CBP and is normally location- or firm-specific. A CBP can easily be expressed in a graphical fashion as shown in Exhibit 1.2. The CBP attributes and features (described in the circles) are chosen by management to fulfill certain customer wants and needs. For example, designer checks, a peripheral good, meet the customer’s wants and needs of style and image. Online bill payment, a peripheral service, meets the customer’s wants and needs of convenience and speed of service. A variant might be a fishing pond where kids can fish while parents shop for vehicles. When drawing the CBP one should not mix CBP features and customer wants and needs on the same diagram. An electronic key on a hotel door is a CBP feature while what the customer wants and needs is safety.

The size of the circles in the CBP framework can signify the relative importance of each good and service. In some cases, goods and services content in a CBP framework are approximately equal. For
Goods and services are usually bundled together as a deliberate marketing and operations strategy. Mercedes automobiles, for example, bundle a premium good, the automobile, with many premium services. Such services include customized leasing, insurance, and warranty programs that focus on the “financial productivity” of owning a Mercedes vehicle. Other customized services bundled with the vehicle include personalized invitations to drive its new cars on a test track, a 24/7 telephone hot line, and invitations to private owner parties. Such bundling is described by the customer benefit package framework.

A similar classification of OM activities in terms of high/low customer contact was first proposed in the classic article: Chase, R. B., “Where does the customer fit in a service operation?” Harvard Business Review, November–December 1978, p. 139.

Finally, we may bundle a group of CBPs together. One example would be a combined land-cruise vacation to Alaska, which might consist of a bundle of CBPs such as the travel agency that books the package and optional land excursions from the ship; the land-tour operator that handles hotels, transportation, and baggage handling; and the cruise line that provides air travel, meals, and entertainment. Bundled CBPs raise some interesting issues about pricing strategies and partnerships among firms. For example, a firm example, McDonald’s (food and fast service) and IBM (computers and customer solutions) might argue that their primary goods and services are of equal importance, so a graphical representation would show two equal-sized and overlapping circles as the center of the CBP.
Exhibit 1.2 A CBP Example for Purchasing a Vehicle

Exhibit 1.3 Examples of Goods and Service Content

Might actually be able to charge a premium price for the bundled CBPs than if purchased separately, or alliances between hotels and airlines provide discounted vacation packages that are less expensive than if booked separately.

The CBP framework is a way to conceptualize and visualize goods and services by thinking broadly about how goods and services are bundled and configured together. This is a key input to designing the right process to create and deliver each of the goods or services to customers.

In most cases, however, many “goods” and “services” that we normally think of have a mixture of both goods and service content. Exhibit 1.3 illustrates a continuum of goods and service content with several examples. Toothpaste, for instance, is high in goods content, but when you purchase it, you are also purchasing some services, such as a telephone call center to field customer questions and complaints. Similarly, a bicycle might seem like a pure good, but it often includes such services as safety instruction and maintenance. At the other extreme in Exhibit 1.3 are psychiatric services, which are much higher in service content, but might include goods such as a bill, books, and medical brochures that support the service. Attending a symphony, play, or movie is essentially a pure service, but may include program brochures and ticket stubs that offer discounts at local restaurants as peripheral goods.
Biztainment – (Huh?)

Why would someone pay, for example, to crush grapes with her feet? Might it be that the process of doing this is as valuable to the customer as the outcome itself? Entertainment is the act of providing hospitality, escapism, fun, excitement, and/or relaxation to people as they go about their daily work and personal activities. The addition of entertainment to an organization’s customer benefit package provides unique opportunities for companies to increase customer satisfaction and grow revenue. Biztainment is the practice of adding entertainment content to a bundle of goods and services in order to gain competitive advantage. The old business model of just selling and servicing a physical vehicle is gone. For example, a BMW automobile dealership in Fort Myers, Florida, recently opened a new 52,000-square-foot facility that offers a putting green, private work areas, a movie theater, wireless Internet access, massage chairs, a golf simulator, and a café, so that customers have multiple entertainment options during their visits.

Biztainment can be applied in both manufacturing and service settings. Consider the following examples:

- Manufacturing—old and new factory tours, showrooms, customer training and education courses, virtual tours, short films on how things are made, driving schools, history lessons on the design and development of a physical good
- Retail—shopping malls, simulators, product demonstrations, climbing walls, music, games, contests, holiday decorations and walk-around characters, blogs, interactive store designs, aquariums, movie theaters, makeovers
- Restaurants—toys, themes, contests, games, characters, playgrounds, live music
- Agriculture—pick-your-own food, mazes, make-your-own wine, grape-stomping, petting zoos, farm tours
- Lodging—kids’ spas, health clubs, casinos, cable television, arcades, massage, wireless Internet, arts and crafts classes, pools, family games, wildlife, miniature golf
- Telecommunications—picture mail, text and video messaging, music and TV downloads, cool ring tones, designer phones, iPhone “apps”

Some organizations that use entertainment as a means of enhancing the firm’s image and increasing sales that you might be familiar with are the Hard Rock Café, Chuck E. Cheese, and Benihana of Tokyo restaurants; cable TV shows like How It’s Made; the Las Vegas Treasure Island casino/hotel pirate battle; and so on. The data show the value of biztainment. For example, Build-A-Bear Workshop boasts an average of $600 per square foot in annual revenue, double the U.S. mall average, and Holiday Inns found that hotels with holidomes have a 20% higher occupancy rate and room rates that are, on average, $28 higher.8

A process is a sequence of activities that is intended to create a certain result, such as a physical good, a service, or information. A practical definition, according to AT&T, is that a process is how work creates value for customers.9 Key processes in business typically include:

1. value creation processes, focused on primary goods or services, such as assembling dishwashers or providing a home mortgage;
2. support processes, such as purchasing materials and supplies, managing inventory, installation, customer support, technology acquisition, and research and development; and
3. general management processes, including accounting and information systems, human resource management, and marketing.

Exhibit 1.4 depicts how these different types of process are interrelated. For example, the objective of general management processes is to coordinate key value creation and support processes to achieve organization goals and objectives.

Processes are the building blocks for the creation of goods and services, and are vital to many activities in operations management. For example, consider the CBP for purchasing a vehicle that is shown in Exhibit 1.2. Processes need to be designed to create and deliver each of the peripheral goods and services shown in the exhibit.
Pal’s Sudden Service is a small chain of mostly drive-through quick service restaurants located in northeast Tennessee and southwest Virginia. Pal’s competes against major national chains and outperforms all of them by focusing on important customer requirements such as speed, accuracy, friendly service, correct ingredients and amounts, proper food temperature, and safety. Pal’s uses extensive market research to fully understand customer requirements: convenience; ease of driving in and out; easy-to-read menus; simple, accurate order-system; fast service; wholesome food; and reasonable price. To create value, Pal’s has developed a unique ability to effectively integrate production and service into its operations. Pal’s has learned to apply world-class management principles and best-in-class processes in a customer-driven approach to business excellence that causes other companies to emulate their systems. Every process is flowcharted and analyzed for opportunities for error, and then mistake-proofed if at all possible. Entry-level employees—mostly high school students in their first job—receive 120 hours of training on precise work procedures and process standards in unique self-teaching, classroom, and on-the-job settings, and reinforced by a “Caught Doing Good” program that provides recognition for meeting quality standards and high-performance expectations. In such performance measures as complaints, profitability, employee turnover, safety, and productivity, Pal’s has a significant advantage over its competition.

For example, process objectives for a free car wash would be speed of service, a clean car, and no vehicle damage. OM managers would ask questions such as: Should the car wash clean the inside as well as the outside of the car? How long should a customer be expected to wait? What types of chemicals should be used to clean the car? What training should the employees who interact with the customer and service the vehicle have? The process would consist of such steps as checking the car in, performing the wash, inspecting the results, notifying the customer that the car is finished, and quickly delivering the car back to the customer.

All organizations have networks of processes that create value for customers (called value chains, which we explore in Chapter 2). For example, Pal’s Sudden Service (see the box below) begins with raw materials and suppliers providing items such as meat, lettuce, tomatoes, buns, and packaging; uses intermediate processes for order taking, cooking, and final assembly; and ends with order delivery and hopefully—happy customers.

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**Exhibit 1.4 How Primary, Support, Supplier, and Management Processes Are Related**

- **General Management Processes**
  - **Value Creation Process**
  - **Customer Perceived Benefits**
  - **Support Processes**
  - **Value Creation Process**
  - **Value Creation Process**
  - **Value Creation Process**

For example, process objectives for a free car wash would be speed of service, a clean car, and no vehicle damage. OM managers would ask questions such as: Should the car wash clean the inside as well as the outside of the car? How long should a customer be expected to wait? What types of chemicals should be used to clean the car? What training should the employees who interact with the customer and service the vehicle have? The process would consist of such steps as checking the car in, performing the wash, inspecting the results, notifying the customer that the car is finished, and quickly delivering the car back to the customer.

All organizations have networks of processes that create value for customers (called value chains, which we explore in Chapter 2). For example, Pal’s Sudden Service (see the box below) begins with raw materials and suppliers providing items such as meat, lettuce, tomatoes, buns, and packaging; uses intermediate processes for order taking, cooking, and final assembly; and ends with order delivery and hopefully—happy customers.
During the Industrial Revolution, however, many new inventions came into being that allowed goods to be manufactured with greater ease and speed. The inventions reduced the need for individual artisans and led to the development of modern factories.

As international trade grew in the 1960s, the emphasis on operations efficiency and cost reduction increased. Many companies moved their factories to low-wage countries. Managers became enamored with computers, robots, and other forms of technology. While advanced technology continues to revolutionize and improve production, in the 1960s and 1970s technology was viewed primarily as a method of reducing costs, and distracted managers from the important goal of improving the quality of goods and services and the processes that create them. American business was soon to face a rude awakening.

Exhibit 1.5 Five Eras of Operations Management

- Focus on cost and efficiency
- Focus on quality
- Focus on customization and design
- Focus on time
- Focus on service and value


Cost minimization.........................................................Value maximization
Mass production...........................................................Mass customization
Manufacturing-based technology.................................Information-based technology
Focus on goods.........................................................Focus on services
Local markets...............................................................Global markets

The last century, operations management has undergone more changes than any other functional area of business and is the most important factor in competitiveness. That is one of the reasons why every business student needs a basic understanding of the field. Exhibit 1.5 is a chronology of major themes that have changed the scope and direction of operations management over the last half century. To better understand the challenges facing modern business and the role of OM in meeting them, let us briefly trace the history and evolution of these themes.

6.1 A Focus on Efficiency

Contemporary OM has its roots in the Industrial Revolution that occurred during the late 18th and early 19th centuries in England. Until that time, goods had been produced in small shops by artisans and their apprentices without the aid of mechanical equipment.

6.1 A Focus on Efficiency
6.2 The Quality Revolution

As Japan was rebuilding from the devastation of World War II, two U.S. consultants, W. Edwards Deming and Joseph Juran, were sought extensively by Japanese industry. Deming and Juran told Japanese executives that continual improvement of quality would open world markets, free up capacity, and improve their economy. The Japanese eagerly embraced that message. They embarked on a massive effort to train the workforce, using statistical tools developed at Western Electric and other innovative management tools to identify causes of quality problems and fix them. They made steady progress in reducing defects and paid careful attention to what consumers wanted. Those efforts continued at a relentless pace until, by the mid 1970s, the world discovered that Japanese goods had fewer defects, were more reliable, and better met consumer needs than American goods. As a result, Japanese firms captured major shares of world markets in many different industries such as automobiles and electronics. Therefore, quality became an obsession with top managers of nearly every major company and its impact continues to be seen today. In 1987 the U.S. government established the Malcolm Baldrige National Quality Award to focus national attention on quality.

6.3 Customization and Design

As the goals of low cost and high product quality became “givens,” companies began to emphasize innovative designs and product features to gain a competitive edge. Quality meant much more than simply defect reduction; quality meant offering consumers new and innovative products that not only met their expectations, but also surprised and delighted them. Inflexible mass-production methods that produced high volumes of standardized goods and services using unskilled or semiskilled workers and expensive single-purpose equipment, though very efficient and cost-effective, were inadequate for the new goals of increased good and service variety and continual product improvement. The operating system had to change.

New types of operating systems emerged that enabled companies to manufacture goods and services better, cheaper, and faster than their competitors, while facilitating innovation and increasing variety. The Internet began to help companies customize their goods and services for global markets.

6.4 Time-Based Competition

Companies that do not respond quickly to changing customer needs will lose out to competitors that do. An example of quick response is the production of the custom-designed Motorola pager, which is completed within 80 minutes and often can be delivered to the customer the same day. As information technology matured, time became an important source of competitive advantage. Quick response is achieved by continually improving and reengineering processes; that is, fundamentally rethinking and redesigning processes to achieve dramatic improvements in cost, quality, speed, and service. That task includes developing products faster than competitors, speeding ordering and delivering processes, rapidly responding to changes in customers’ needs, and improving the flow of paperwork.

Today, about 90 percent of the jobs in the U.S. economy are in service-providing processes.
6.5 The Service Revolution

While the goods-producing industries were getting all the attention in the business community, the popular press, and in business school curricula, service industries were quietly growing and creating many new jobs in the U.S. economy. In 1955, about 50 percent of the U.S. workforce was employed in goods-producing industries and 50 percent in service-providing industries. Today, about four of every five U.S. jobs are in services.

Exhibit 1.6 documents the structure of the U.S. economy and where people work. This aggregate mix between goods-producing and service-providing jobs is 81.8 percent service and 18.2 percent goods. There are many interesting industry comparisons in Exhibit 1.6, but let’s point out just a few. Manufacturing, for example, accounts for 11.6 percent of total U.S. employment or about 1 in 10 jobs. Today, state and local government jobs are 11.9 percent of total jobs, that is, about the same percent as manufacturing. Many other countries, such as France and the United Kingdom, also have a high percentage of total jobs in the service sector.

In addition, estimates are that at least 50 percent of the jobs in goods-producing industries are service- and information-related such as human resource management, accounting, financial, legal, advertising, purchasing, engineering, and so on. Thus, today, about 90 percent of the jobs in the U.S. economy are in service-providing processes \[81.8 + (0.5) (18.2\%) = 90.9\%\]. This means that if you are employed in the United States, you will most likely work in a service- or information-related field. Because of these statistics, a principal emphasis in this book is on services—either in service-providing industries such as health care and banking or understanding how services complement the sale of goods in goods-producing industries such as machine tools and computers.
OM is continually changing, and all managers need to stay abreast of the challenges that will define the future workplace. Among these are technology, globalization, changing customer expectations, a changing workforce, the loss of manufacturing jobs in western nations, and building sustainability as part of an organization's corporate responsibility.

- Technology has been one of the most important influences on the growth and development of OM during the second half of the 20th century. Microprocessors have become ubiquitous in most consumer products and industrial processes. Advances in design and fabrication of goods as well as advances in information technology to enhance services have provided the ability to develop products that one could only dream of a few decades ago. They also enable managers to more effectively manage and control extremely complex operations.

- Globalization has changed the way companies do business and must manage their operations. With advances in communications and transportation, we have passed from the era of huge regional factories with large labor forces and tight community ties to an era of the “borderless marketplace.” No longer are “American” or “Japanese” products manufactured exclusively in America or Japan. The Mazda Miata, for example, was designed in California, financed in Tokyo and New York, tested in England, assembled in Michigan and Mexico, and built with components designed in New Jersey and produced in Japan.

- Consumers’ expectations have risen dramatically. They demand an increasing variety of products with new and improved features that meet their changing needs. They expect products that are defect-free, have high performance, are reliable and durable, and are easy to repair. They also expect rapid and excellent service for the products they buy. For the services they buy, customers expect short waiting and processing times, availability when needed, courteous treatment from employees, consistency, accessibility and convenience, accuracy, and responsiveness to unex-pected problems. Companies must now compete on all these dimensions.

- Today’s workers are different; they demand increasing levels of empowerment and more meaningful work. Today’s work requires constant learning and more abstract thinking and on-the-spot decision-making skills. Service plays a much greater role within organizations. Finally, the environment is different; we live in a global business environment without boundaries.

- Perhaps the biggest challenge that OM faces in modern Western nations is the loss of manufacturing jobs. While manufacturing has contributed immensely to Western nations’ standard of living and quality of life, the economic pressures on manufacturing are so great that firms move operations to other nations, merge with other firms, or face bankruptcy. Today, manufacturing is truly a global management challenge where OM plays a vital role. Companies that are persistent innovators of their global operations and supply chains create a huge competitive advantage. In addition, for a whole host of emerging industries, such as recycling, genetic engineering, nanotechnology, green manufacturing, space technology, new methods of energy generation, and robotic medical equipment, new and exciting opportunities emerge for manufacturers. OM issues of design, production, quality, cost, cycle time, safety, and delivery have been critical in past decades, and they will continue to be so in the future. To compete, manufacturers must stay ahead of consumers’ needs by increasing product innovation, speeding up time-to-market, and operating highly effective global supply chains. This global perspective makes OM a critical skill, now and in the future.

- A final challenge that nearly every organization faces is sustainability. Sustainability refers to an organization’s ability to strategically address current business needs and successfully develop a long-term strategy that embraces opportunities and manages risk for all products, systems, supply chains, and processes to preserve resources for future generations. The three dimensions of sustainability are environmental, social, and economic. Environmental sustainability focuses on OM activities such as remanufacturing, waste management, green supply chains, and energy conservation. Social sustainability requires organizations to continually evaluate the impacts of their products and operations on society as a part of the organization’s overall corporate responsibilities, such as creating a zero carbon footprint product or supply chain. Finally, economic sustainability revolves around making sound financial and operational decisions about workforce capability and capacity, resource acquisitions, technology, knowledge, core competencies, work systems, facilities, and equipment, as well as preparation for real-time or short-term emergencies. All of these activities relate closely to OM, making sustainability an important issue for all operations managers.
1. Explain how operations management activities affect the customer experiences described in the anecdote at the beginning of this chapter. What “moments of truth” would a customer at Disney World encounter? Think about the total experience including lodging, food service, shopping, and transportation, as well as theme park attractions and operations.

2. Describe a customer experience you have personally encountered where the good or service or both were unsatisfactory (for example, defective product, errors, mistakes, poor service, service upsets, and so on). How might the organization have handled it better and how could operations management have helped?

3. What implications do the differences between goods and services have for organizations trying to provide both goods and services to customers in a balanced CBP? Do you see any conflicts in a goods-producing versus service-providing way of thinking?

4. Provide some examples similar to those in Exhibit 1.3, and explain the degree of goods and services content for these examples.

5. Explain why a bank teller, nurse, or flight attendant must have service management skills. How do the required skills differ for someone working in a factory? What are the implications for hiring criteria and training?

6. Draw the customer benefit package (CBP) for one of the items in the following list and explain how your CBP provides value to the customer. Make a list of the processes that you think would be necessary to create and deliver each good or service in the CBP you selected and briefly describe issues that must be considered in designing these processes.
   • a trip to Disney World
   • a new personal computer
   • a credit card
   • a fast-food restaurant
   • a wireless mobile telephone
   • a one-night stay in a hotel

7. Review the box for Pal’s Sudden Service and find Pal’s Web site. Based on this information, describe all the OM activities that occur in a typical day at Pal’s.

8. Search the Web for “factory tours or stories of quality failures.” Write a paper describing the operations in one of the companies you found.

9. One of our students, who had worked for Taco Bell, related a story of how his particular store developed a “60-second, 10-pack club” as an improvement initiative and training tool. The goal was to make a 10-pack of tacos in a minute or less, each made and wrapped correctly, and the total within one ounce of the correct weight. Employees received recognition and free meals for a day. Employees strove to become a part of this club, and more importantly, service times dropped dramatically. Techniques similar to those used to improve the taco-making process were used to improve other products. Explain how this anecdote relates to process thinking. What would the employees have to do to become a part of the club?

10. Do you think you will be working in manufacturing or services when you graduate? What do you think will be the role of manufacturing in the U.S. economy in the future?
Zappos (www.zappos.com) is a Las Vegas-based online retailer that has been cited in Fortune’s list of the Best Companies to Work For and Fast Company’s list of the world’s most innovative companies. Zappos was founded in San Francisco in 1999 and moved to Las Vegas for the cheap real estate and abundant call center workers. The company sells a very large variety of shoes from nearly every major manufacturer and has expanded its offerings to handbags, apparel, sunglasses, watches, and electronics. Despite the crippling economic downturn, sales jumped almost 20% in 2008, passing the $1 billion mark two years ahead of schedule.

The company’s first core value is “Deliver WOW through service,” which is obvious if you’ve ever ordered from Zappos. It provides free shipping in both directions on all purchases. It often gives customers surprise upgrades for faster shipping. And it has a 365-day return policy. In 2003, Zappos made a decision about customer service: they view any expense that enhances the customer experience as a marketing cost because it generates more repeat customers through word of mouth. CEO Tony Hsieh never outsourced his call center because he considers the function too important to be sent to India. Job one for these front-liners is to delight callers. Unlike most inbound telemarketers, they don’t work from a script. They’re trained to encourage callers to order more than one size or color, because shipping is free in both directions, and to refer shoppers to competitors when a product is out of stock. Most important, though, they’re implored to use their imaginations. Which means that a customer having a tough day might find flowers on his or her doorstep the next morning. One Minnesota customer complained that her boots had begun leaking after almost a year of use. Not only did the Zappos customer service representative send out a new pair—in spite of a policy that only unworn shoes are returnable—but she also told the customer to keep the old ones, and mailed a handwritten thank-you.\(^{11}\)

Zappos uses a sophisticated computer system known as Genghis to manage its operations. This includes an order entry, warehouse management, inventory, and e-commerce system. It tracks inventory so closely that customers can check online how many pairs of size 12 Clarks Desert boots are available in the color sand. For employees, it automatically sends daily email reminders to call a customer back, coordinates the warehouse robot system, and produces reports that can specifically assess the impact on margins of putting a particular item on sale.

Case Questions for Discussion

1. Draw and describe the customer benefit package that Zappos provides. Identify and describe one primary value creation, one support, and one general management process you might encounter at Zappos (see Exhibit 1.4).
2. Explain the role of service encounters and service management skills at Zappos. How does Zappos create superior customer experiences?
3. Describe how each OM activity in Exhibit 1.1 impacts the management of both the goods that Zappos sells and the services that it provides. (You might want to build a table like Exhibit 1.1 to organize your answers.)
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