

9

Achieving Operational Excellence
and Customer Intimacy: Enterprise
Applications

LEARNING OBJECTIVES

After reading this chapter, you will be able to answer the following questions:

- 9-1** How do enterprise systems help businesses achieve operational excellence?
- 9-2** How do supply chain management systems coordinate planning, production, and logistics with suppliers?
- 9-3** How do customer relationship management systems help firms achieve customer intimacy?
- 9-4** What are the challenges that enterprise applications pose, and how are enterprise applications taking advantage of new technologies?
- 9-5** How will MIS help my career?

CHAPTER CASES

Avon Beautifies Its Supply Chain
Soma Bay Prospers with ERP in the Cloud
Kenya Airways Flies High with Customer Relationship Management
Clemens Food Group Delivers with New Enterprise Applications

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Writing Assignments: 9-17, 9-18; eText with Conceptual Animations

Avon Beautifies Its Supply Chain

Avon Products Inc. is the oldest beauty company in the United States, and has been in business for over 130 years. It manufactures and sells cosmetics, fragrances, toiletries, accessories, apparel, and various decorative home furnishings. Avon is also the world's leading direct seller of beauty and related products, with 6 million independent door-to-door sales representatives in 143 countries and over \$8 billion in annual revenue. Avon also sells through other channels, including the Internet, catalog, and physical outlets.

To survive in a highly competitive, fast-changing industry, motivate representatives, and stimulate sales, Avon launches marketing campaigns with fresh products and promotions every few weeks. To be successful, Avon must be able to anticipate and react quickly to market trends and customer preferences. Avon processes 50,000 orders each day and there is little margin for error. Avon's warehouses must stock the items customers want and deliver them quickly, often to remote locations around the globe.

Until recently, Avon's global supply chain was not up to the task. Avon had recently expanded operations in Europe, the Middle East, and Africa, but there was no central planning function responsible for demand, inventory, and supply planning across the enterprise. Production planning at Avon's three factories in Germany, the United Kingdom, and Poland was highly manual, inflexible, and incapable of supporting Avon's growth in new markets.

To improve how the company dealt with product availability and inventory, Avon implemented JDA Software's Manufacturing and Intelligent Fulfillment solutions to centralize planning for demand, inventory, and supply across its entire global enterprise. The software helps Avon achieve consistent forecast accuracy in an environment that includes challenges of shorter product lifecycles, seasonality, multiple sales channels, frequent promotions, and continuously changing localized shopper preferences. JDA Intelligent Fulfillment helps companies make intelligent and profitable distribution decisions. The software helps reduce inventory levels and costs, improve customer service, and support more agile, profitable,



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and responsive operations, meeting the needs of many different types of Avon markets in a single implementation.

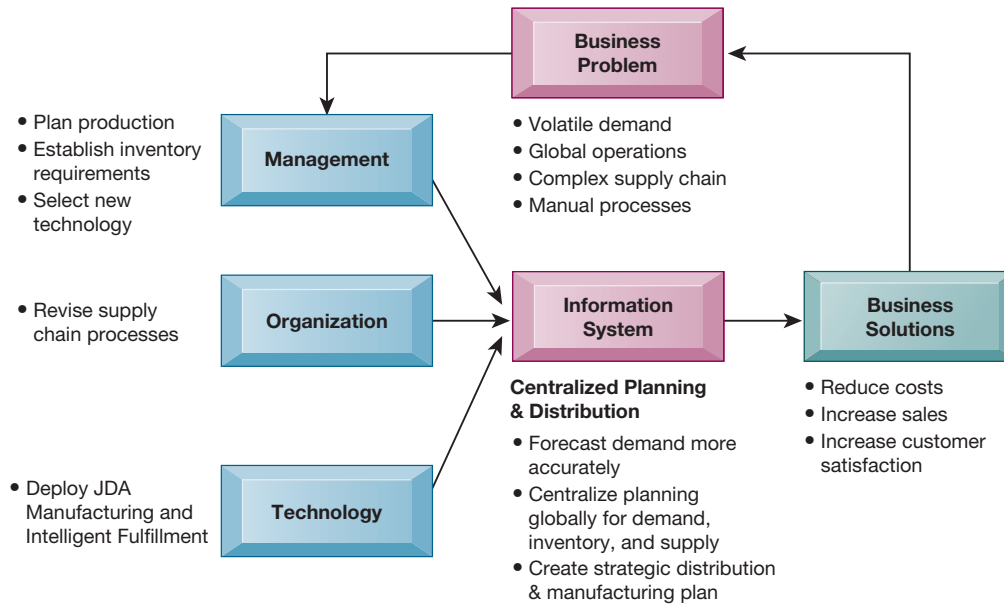
The JDA software collects supply chain data about inventory, future sales demands, transport schedules, and sales history from Avon's many markets. The system uses these data along with JDA advanced planning parameters to create a strategic distribution and manufacturing plan. The system also provides Avon with a list of inventory imbalances, service risks, and shipping requirements. Avon can now streamline order processing across borders and respond more quickly to changes in customer demand.

JDA's capabilities for advanced planning and distribution, coupled with its flexibility, made it possible for Avon to meet the needs of many different types of Avon markets with a single system. Avon implemented the JDA software across 29 markets in Europe, Middle East, and Africa (EMEA) within four months, delivering training across the EMEA region in eight languages. Since Avon implemented the JDA supply chain solution, its cost of servicing customers has been reduced, while its customer service rating has increased to 99.5 percent. Inventory levels have dropped by 17 percent in just six months, providing immediate savings of \$20 million. Avon now has complete visibility into all aspects of its supply chain and will be able to enter new countries and markets much more easily.

Sources: <https://jda.com>, accessed January 21, 2018; <https://about.avon.com>, accessed January 20, 2018; and "Avon Supply Chain Makeover," JDA Software Group, 2016.

Avon's problems with planning, inventory, and supply in a global multichannel marketplace illustrate the critical role of supply chain management systems in business. Avon's business performance was impeded because it could not balance supply and constantly changing demand for its products in many different markets around the world. Avon's existing systems were highly manual and lacked the flexibility to support Avon's growth in new markets. Products were not always available when customers ordered them. Sometimes this left the company holding too much inventory it couldn't sell or not enough at the right time or place to fulfill customer orders.

The chapter-opening diagram calls attention to important points raised by this case and this chapter. Avon competes in the global beauty industry where customer tastes change rapidly, demand is very volatile, and the company is expected to come up quickly with enticing new products. The company's supply chain is far-reaching and complex, servicing customers ordering items in many different locations around the globe. Avon's legacy systems were unable to coordinate demand, inventory, and supply planning across its entire global enterprise. Implementing JDA software tools for supply chain planning and fulfillment has made it much easier for Avon's management to access and analyze demand data for forecasting, inventory planning, and fulfillment, greatly improving both decision making and operational efficiency across the global enterprise.



Here are some questions to think about: How is Avon's business model affected by having an inefficient supply chain? How did JDA software tools improve the way Avon ran its business?

9-1 How do enterprise systems help businesses achieve operational excellence?

Around the globe, companies are increasingly becoming more connected, both internally and with other companies. If you run a business, you'll want to be able to react instantaneously when a customer places a large order or when a shipment from a supplier is delayed. You may also want to know the impact of these events on every part of the business and how the business is performing at any point in time, especially if you're running a large company. Enterprise systems provide the integration to make this possible. Let's look at how they work and what they can do for the firm.

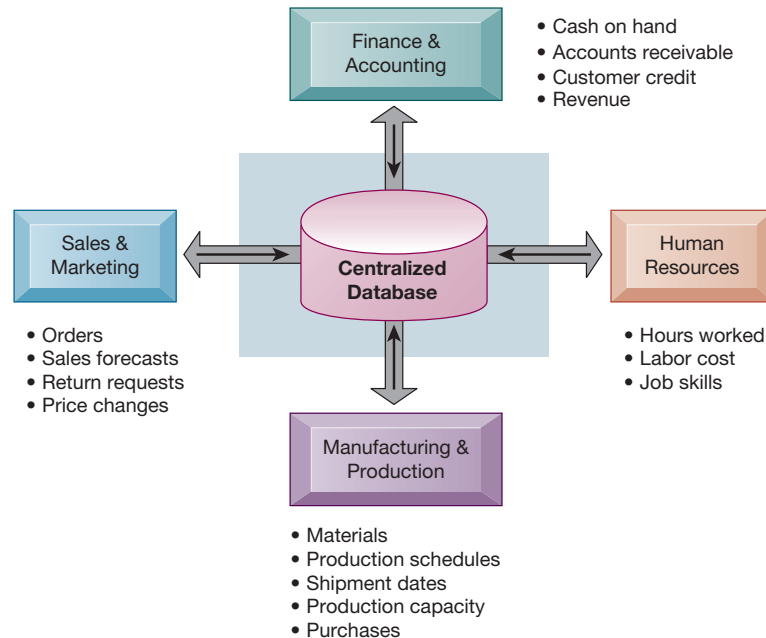
What are Enterprise Systems?

Imagine that you had to run a business based on information from tens or even hundreds of databases and systems, none of which could speak to one another. Imagine your company had 10 major product lines, each produced in separate factories, and each with separate and incompatible sets of systems controlling production, warehousing, and distribution.

At the very least, your decision making would often be based on manual hard-copy reports, often out of date, and it would be difficult to understand what is happening in the business as a whole. Sales personnel might not be able to tell at the time they place an order whether the ordered items are in inventory, and manufacturing could not easily use sales data to plan for new production. You now have a good idea of why firms need a special enterprise system to integrate information.

FIGURE 9.1 HOW ENTERPRISE SYSTEMS WORK

Enterprise systems feature a set of integrated software modules and a central database by which business processes and functional areas throughout the enterprise can share data.



Chapter 2 introduced enterprise systems, also known as enterprise resource planning (ERP) systems, which are based on a suite of integrated software modules and a common central database. The database collects data from many divisions and departments in a firm and from a large number of key business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources, making the data available for applications that support nearly all an organization's internal business activities. When new information is entered by one process, the information is made immediately available to other business processes (see Figure 9.1).

If a sales representative places an order for tire rims, for example, the system verifies the customer's credit limit, schedules the shipment, identifies the best shipping route, and reserves the necessary items from inventory. If inventory stock is insufficient to fill the order, the system schedules the manufacture of more rims, ordering the needed materials and components from suppliers. Sales and production forecasts are immediately updated. General ledger and corporate cash levels are automatically updated with the revenue and cost information from the order. Users can tap into the system and find out where that particular order is at any minute. Management can obtain information at any point in time about how the business is operating. The system can also generate enterprise-wide data for management analyses of product cost and profitability.

Enterprise Software

Enterprise software is built around thousands of predefined business processes that reflect best practices. Table 9.1 describes some of the major business processes that enterprise software supports.

Companies implementing this software first have to select the functions of the system they wish to use and then map their business processes to the predefined

TABLE 9.1 BUSINESS PROCESSES SUPPORTED BY ENTERPRISE SYSTEMS

Financial and accounting processes, including general ledger, accounts payable, accounts receivable, fixed assets, cash management and forecasting, product-cost accounting, cost-center accounting, asset accounting, tax accounting, credit management, and financial reporting

Human resources processes, including personnel administration, time accounting, payroll, personnel planning and development, benefits accounting, applicant tracking, time management, compensation, workforce planning, performance management, and travel expense reporting

Manufacturing and production processes, including procurement, inventory management, purchasing, shipping, production planning, production scheduling, material requirements planning, quality control, distribution, transportation execution, and plant and equipment maintenance

Sales and marketing processes, including order processing, quotes, contracts, product configuration, pricing, billing, credit checking, incentive and commission management, and sales planning

business processes in the software. (One of our Learning Tracks shows how SAP enterprise software handles the procurement process for a new piece of equipment.) Configuration tables provided by the software manufacturer enable the firm to tailor a particular aspect of the system to the way it does business. For example, the firm could use these tables to select whether it wants to track revenue by product line, geographical unit, or distribution channel.

If the enterprise software does not support the way the organization does business, companies can rewrite some of the software to support the way their business processes work. However, enterprise software is unusually complex, and extensive customization may degrade system performance, compromising the information and process integration that are the main benefits of the system. If companies want to reap the maximum benefits from enterprise software, they must change the way they work to conform to the business processes defined by the software.

To implement a new enterprise system, Tasty Baking Company identified its existing business processes and then translated them into the business processes built into the SAP ERP software it had selected. To ensure that it obtained the maximum benefits from the enterprise software, Tasty Baking Company deliberately planned for customizing less than 5 percent of the system and made very few changes to the SAP software itself. It used as many tools and features that were already built into the SAP software as it could. SAP has more than 3,000 configuration tables for its enterprise software.

Leading enterprise software vendors include SAP, Oracle, IBM, Infor Global Solutions, and Microsoft. Versions of enterprise software packages are designed for small and medium-sized businesses and on-demand software services running in the cloud (see the chapter-opening case and Section 9-4).

Business Value of Enterprise Systems

Enterprise systems provide value by both increasing operational efficiency and providing firmwide information to help managers make better decisions. Large companies with many operating units in different locations have used enterprise systems to enforce standard practices and data so that everyone does business the same way worldwide.

Coca-Cola, for instance, implemented a SAP enterprise system to standardize and coordinate important business processes in 200 countries. Lack of standard, companywide business processes had prevented the company from using its worldwide buying power to obtain lower prices for raw materials and from reacting rapidly to market changes.

Enterprise systems help firms respond rapidly to customer requests for information or products. Because the system integrates order, manufacturing, and delivery data, manufacturing is better informed about producing only what customers have ordered, procuring exactly the right number of components or raw materials to fill actual orders, staging production, and minimizing the time that components or finished products are in inventory.

Alcoa, the world's leading producer of aluminum and aluminum products with operations spanning 31 countries and more than 200 locations, had initially been organized around lines of business, each of which had its own set of information systems. Many of these systems were redundant and inefficient. Alcoa's costs for executing requisition-to-pay and financial processes were much higher, and its cycle times were longer than those of other companies in its industry. (Cycle time refers to the total elapsed time from the beginning to the end of a process.) The company could not operate as a single worldwide entity.

After implementing enterprise software from Oracle, Alcoa eliminated many redundant processes and systems. The enterprise system helped Alcoa reduce requisition-to-pay cycle time by verifying receipt of goods and automatically generating receipts for payment. Alcoa's accounts payable transaction processing dropped 89 percent. Alcoa was able to centralize financial and procurement activities, which helped the company reduce nearly 20 percent of its worldwide costs.

Enterprise systems provide much valuable information for improving management decision making. Corporate headquarters has access to up-to-the-minute data on sales, inventory, and production and uses this information to create more accurate sales and production forecasts. Enterprise software includes analytical tools to use data the system captures to evaluate overall organizational performance. Enterprise system data have common standardized definitions and formats that are accepted by the entire organization. Performance figures mean the same thing across the company. Enterprise systems allow senior management to find out easily at any moment how a particular organizational unit is performing, determine which products are most or least profitable, and calculate costs for the company as a whole. For example, Alcoa's enterprise system includes functionality for global human resources management that shows correlations between investment in employee training and quality, measures the companywide costs of delivering services to employees, and measures the effectiveness of employee recruitment, compensation, and training. The Interactive Session on Management describes more of these benefits in detail.

9-2 How do supply chain management systems coordinate planning, production, and logistics with suppliers?

If you manage a small firm that makes a few products or sells a few services, chances are you will have a small number of suppliers. You could coordinate your supplier orders and deliveries by using just a telephone and fax machine. But if you manage a firm that produces more complex products and services, you will have hundreds of suppliers, and each of your suppliers will have its own set of suppliers. Suddenly, you will need to coordinate the activities of hundreds or even thousands of other firms to produce your products and services. Supply chain management (SCM) systems, which we introduced in Chapter 2, are an answer to the problems of supply chain complexity and scale.

INTERACTIVE SESSION MANAGEMENT

Soma Bay Prospers with ERP in the Cloud

Soma Bay is a 10-million-square-mile resort community on the Egyptian shore of the Red Sea. It has many attractions that make it a first-class vacation paradise, including five hotels, a championship golf course, water sport facilities, a world-class spa, and luxury vacation homes. Soma Bay Development Company is headquartered in Hurghada, Egypt and has more than 2,000 employees.

Unfortunately, political upheavals and economic conditions have taken a toll on occupancy rates and profitability. When President Hosni Mubarak was overthrown during the Egyptian revolution of 2011, there was a sharp devaluation of Egyptian currency. In the years that followed, political conditions stabilized and the Egyptian economy recovered, but the tourism industry lost U.S. \$1.3 billion after the downing of a commercial airliner over the Sinai Desert in late 2015. Soma Bay Development Company's hotel occupancy rates plummeted from more than 50 percent in 2015 to 25 percent in the first quarter of 2016.

Foreign exchange fluctuations and political upheavals are forces beyond Soma Bay's control, but what the company's management can do during downturns is react intelligently by closely monitoring operations and costs. This is possible thanks to the company's use of a JD Edwards Enterprise One ERP system from Oracle with applications and data residing in Oracle's Cloud Infrastructure as a Service (Oracle Cloud IaaS).

In the past, Soma Bay Development Company had tried to run much of the company using unwieldy Excel-based systems. Managers had to manually manipulate spreadsheets to understand the basic drivers of profitability, and it often took too long to obtain the information needed for sound decision making. These systems made it difficult for Soma Bay to manage its aggressive growth plans, which included construction of 1000 new homes over a five-year period.

Mohammed Serry, Soma Bay Company's CFO, and his team selected JD Edwards Enterprise One for a solution because it could create standardized business processes across functional areas and provide timely reports that explain the profitability of each business unit using a standard chart of accounts. The software can identify the profitability drivers and growth drivers of a business. Enterprise One

seamlessly combines data from the general ledger and other financial systems with data from operational systems.

Soma Bay's Enterprise One cloud platform makes it easy to create cash flow reports, project management reports, accounts receivable aging reports, facility management reports, and key performance indicator reports throughout Soma Bay's distributed organization. Company management also appreciates Oracle Cloud IaaS disaster recovery capabilities. Several years ago, water from an upper floor flooded Soma Bay's Cairo data center. The company was able to restore data and resume operations quickly because it had backups stored in Oracle Cloud.

JD Edwards Enterprise One contains more than 80 separate application modules designed to support a wide range of business processes. The software suite also features mobile applications that support both iOS and Android and can be used on smartphones and tablets. Soma Bay uses the JD Edwards Enterprise One modules for Financials, Procurement, Inventory Management, Job Cost, Real Estate Management, Homebuilder Management, Capital Asset Maintenance, Service Management, and Time and Labor. JD Edwards Enterprise One Homebuilder Management helps Soma Bay coordinate activities and analyze profitability throughout its home-building cycle down to the lot level. JD Edwards Enterprise One Real Estate Management streamlines financial, operational, and facilities management processes for finished properties, coordinating tasks among teams and providing a comprehensive management view of each unit. The Job Cost module shows ongoing costs for the real estate business, which helps management allocate expenses for materials, labor, and other needs and also track expenses against the budgets and forecasts established at the outset of each facilities management project. Managers can identify projects with codes and merge them with financial account numbers to determine budget expenses versus actual expenses. They can thereby verify if complex projects are on track and share expense data among divisions.

The Enterprise One software creates currency-neutral financial reports. This helps reconcile revenue from Soma Bay's tourism division (which

caters to Germany and other parts of Europe) with its home sales division (which is aimed primarily at Egyptians) to neutralize the effect of different currencies on financial results. Home building accounts for about 25 percent of corporate revenue.

Having a dual revenue stream mitigates risks. If the tourism business is slow, Soma Bay still has revenue from the real estate business, and vice versa. The ERP system provides the data required to closely track costs. For example, in 2017 Soma Bay spent 100 million Egyptian pounds (equivalent to approximately U.S. \$5.7 million) on new construction. The Enterprise One system provided the information about cash management and cash flow for sustaining this level of expansion. Soma Bay can carefully monitor cash flow and payments to contractors.

During the 2016 downturn, Soma Bay used the Enterprise One cost management and profitability capabilities to provide detailed financial data that helped managers carefully control fixed operating expenses, helping to minimize losses. Enterprise

One provided a solid understanding of costs and profitability, even though revenue came from different currencies and markets. It was able to show the impact of falling occupancy rates on the business, excluding foreign exchange effect, to help management measure overall performance by legal entity. This knowledge helped Soma Bay weather the downturn and implement an aggressive turnaround plan.

Today, 95 percent of Soma Bay staff members use the Enterprise One software in some capacity. The company has a more stable operating model. Occupancy rates at its five hotels are rising. Soma Bay Development Company is building 500 vacation homes in six seaside communities. According to Cherif Samir, Financial Controller for Soma Bay, being able to track every penny the company spends on a project has revolutionized the business.

Sources: www.searchoracle.com, accessed January 30, 2018; David Baum, "Destination: Cloud," *Profit Magazine*, Fall 2017; and www.somabay.com, accessed January 31, 2018.

CASE STUDY QUESTIONS

1. Identify and describe the problem discussed in this case. What management, organization, and technology factors contributed to the problem?
2. Why was an ERP system required for a solution? How did having a cloud-based ERP system contribute to the solution?
3. What were the business benefits of Soma Bay's new enterprise system? How did it change decision making and the way the company operated?

The Supply Chain

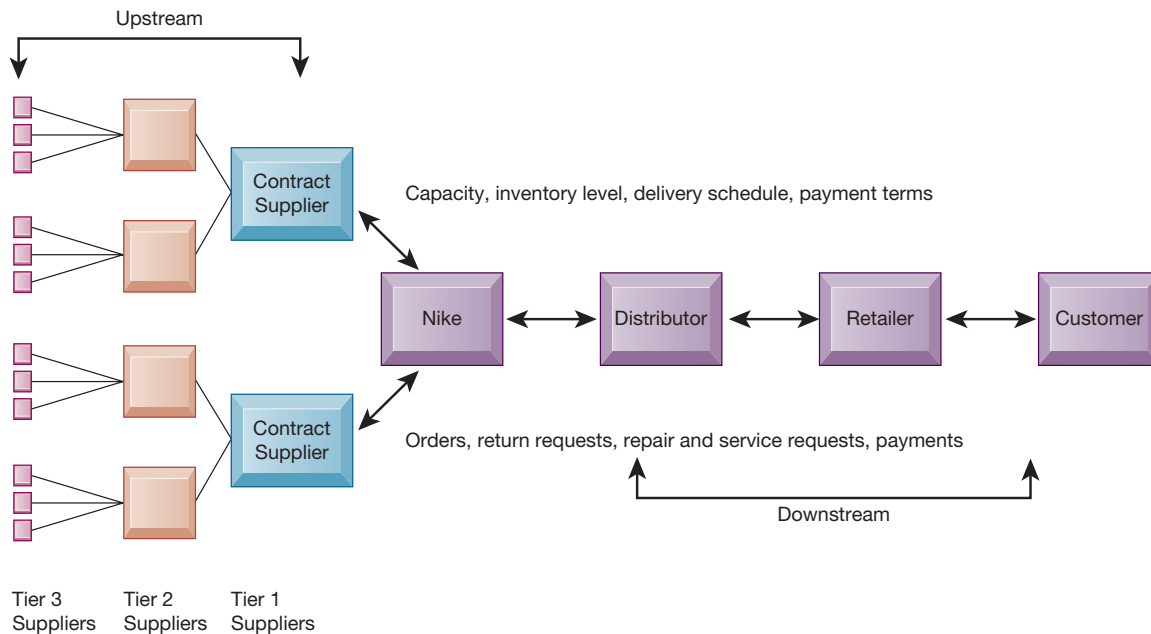
A firm's **supply chain** is a network of organizations and business processes for procuring raw materials, transforming these materials into intermediate and finished products, and distributing the finished products to customers. It links suppliers, manufacturing plants, distribution centers, retail outlets, and customers to supply goods and services from source through consumption. Materials, information, and payments flow through the supply chain in both directions.

Goods start out as raw materials and, as they move through the supply chain, are transformed into intermediate products (also referred to as components or parts) and, finally, into finished products. The finished products are shipped to distribution centers and from there to retailers and customers. Returned items flow in the reverse direction from the buyer back to the seller.

Let's look at the supply chain for Nike sneakers as an example. Nike designs, markets, and sells sneakers, socks, athletic clothing, and accessories throughout the world. Its primary suppliers are contract manufacturers with factories in China, Thailand, Indonesia, Brazil, and other countries. These companies fashion Nike's finished products.

FIGURE 9.2 NIKE'S SUPPLY CHAIN

This figure illustrates the major entities in Nike's supply chain and the flow of information upstream and downstream to coordinate the activities involved in buying, making, and moving a product. Shown here is a simplified supply chain, with the upstream portion focusing only on the suppliers for sneakers and sneaker soles.



Nike's contract suppliers do not manufacture sneakers from scratch. They obtain components for the sneakers—the laces, eyelets, uppers, and soles—from other suppliers and then assemble them into finished sneakers. These suppliers in turn have their own suppliers. For example, the suppliers of soles have suppliers for synthetic rubber, suppliers for chemicals used to melt the rubber for molding, and suppliers for the molds into which to pour the rubber. Suppliers of laces have suppliers for their thread, for dyes, and for the plastic lace tips.

Figure 9.2 provides a simplified illustration of Nike's supply chain for sneakers; it shows the flow of information and materials among suppliers, Nike, Nike's distributors, retailers, and customers. Nike's contract manufacturers are its primary suppliers. The suppliers of soles, eyelets, uppers, and laces are the secondary (Tier 2) suppliers. Suppliers to these suppliers are the tertiary (Tier 3) suppliers.

The *upstream* portion of the supply chain includes the company's suppliers, the suppliers' suppliers, and the processes for managing relationships with them. The *downstream* portion consists of the organizations and processes for distributing and delivering products to the final customers. Companies that manufacture, such as Nike's contract suppliers of sneakers, also manage their own *internal supply chain processes* for transforming materials, components, and services their suppliers furnish into finished products or intermediate products (components or parts) for their customers and for managing materials and inventory.

The supply chain illustrated in Figure 9.2 has been simplified. It only shows two contract manufacturers for sneakers and only the upstream supply chain for sneaker soles. Nike has hundreds of contract manufacturers turning out finished sneakers, socks, and athletic clothing, each with its own set of suppliers.

The upstream portion of Nike's supply chain actually comprises thousands of entities. Nike also has numerous distributors and many thousands of retail stores where its shoes are sold, so the downstream portion of its supply chain is also large and complex.

Information Systems and Supply Chain Management

Inefficiencies in the supply chain, such as parts shortages, underused plant capacity, excessive finished goods inventory, or high transportation costs, are caused by inaccurate or untimely information. For example, manufacturers may keep too many parts in inventory because they do not know exactly when they will receive their next shipments from their suppliers. Suppliers may order too few raw materials because they do not have precise information on demand. These supply chain inefficiencies waste as much as 25 percent of a company's operating costs.

If a manufacturer had perfect information about exactly how many units of product customers wanted, when they wanted them, and when they could be produced, it would be possible to implement a highly efficient **just-in-time strategy**. Components would arrive exactly at the moment they were needed, and finished goods would be shipped as they left the assembly line.

In a supply chain, however, uncertainties arise because many events cannot be foreseen—uncertain product demand, late shipments from suppliers, defective parts or raw materials, or production process breakdowns. To satisfy customers, manufacturers often deal with such uncertainties and unforeseen events by keeping more material or products in inventory than they think they may actually need. The *safety stock* acts as a buffer for the lack of flexibility in the supply chain. Although excess inventory is expensive, low fill rates are also costly because business may be lost from canceled orders.

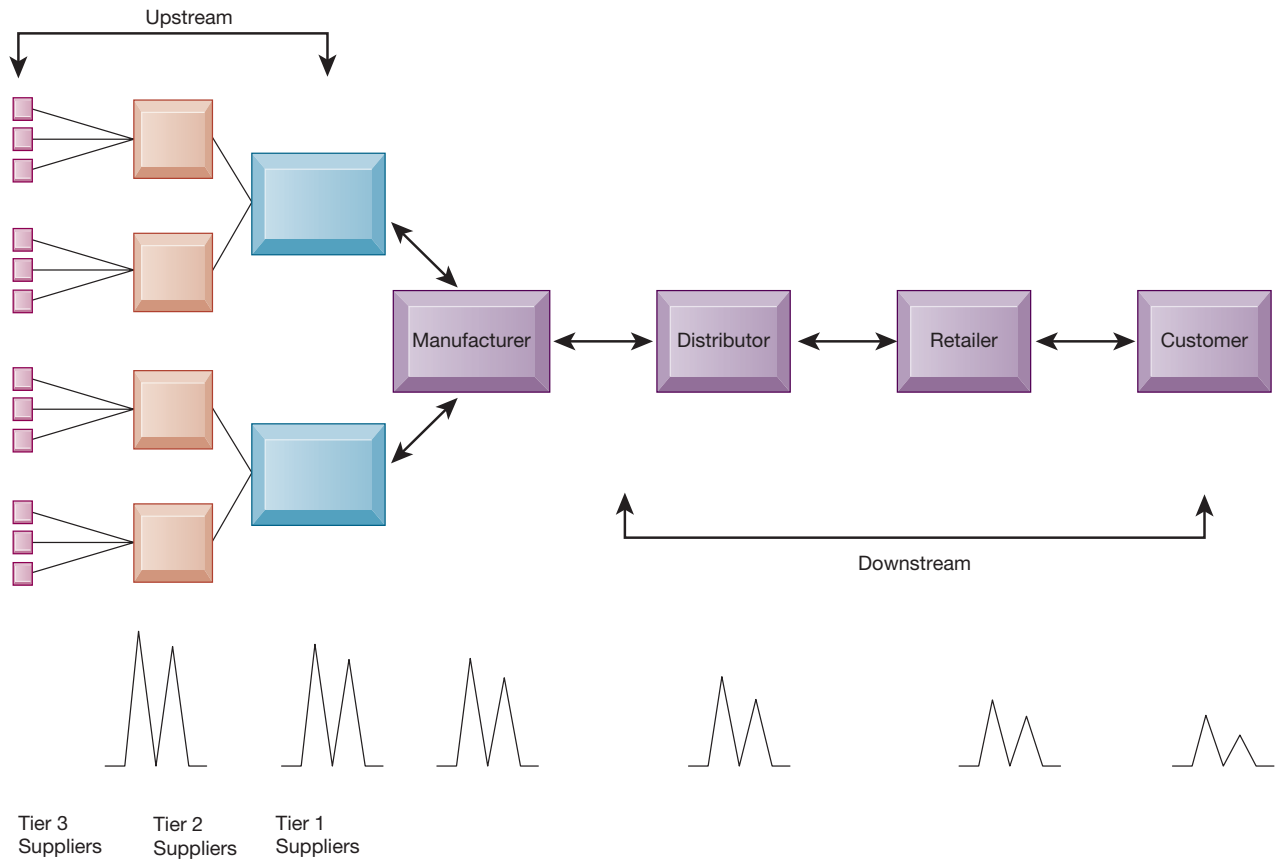
One recurring problem in supply chain management is the **bullwhip effect**, in which information about the demand for a product gets distorted as it passes from one entity to the next across the supply chain. A slight rise in demand for an item might cause different members in the supply chain—distributors, manufacturers, suppliers, secondary suppliers (suppliers' suppliers), and tertiary suppliers (suppliers' suppliers' suppliers)—to stockpile inventory so each has enough just in case. These changes ripple throughout the supply chain, magnifying what started out as a small change from planned orders and creating excess inventory, production, warehousing, and shipping costs (see Figure 9.3).

For example, Procter & Gamble (P&G) found it had excessively high inventories of its Pampers disposable diapers at various points along its supply chain because of such distorted information. Although customer purchases in stores were fairly stable, orders from distributors spiked when P&G offered aggressive price promotions. Pampers and Pampers' components accumulated in warehouses along the supply chain to meet demand that did not actually exist. To eliminate this problem, P&G revised its marketing, sales, and supply chain processes and used more accurate demand forecasting.

The bullwhip effect is tamed by reducing uncertainties about demand and supply when all members of the supply chain have accurate and up-to-date information. If all supply chain members share dynamic information about inventory levels, schedules, forecasts, and shipments, they have more precise knowledge about how to adjust their sourcing, manufacturing, and distribution plans. Supply chain management systems provide the kind of information that helps members of the supply chain make better purchasing and scheduling decisions.

FIGURE 9.3 THE BULLWHIP EFFECT

Inaccurate information can cause minor fluctuations in demand for a product to be amplified as one moves further back in the supply chain. Minor fluctuations in retail sales for a product can create excess inventory for distributors, manufacturers, and suppliers.



Supply Chain Management Software

Supply chain software is classified as either software to help businesses plan their supply chains (supply chain planning) or software to help them execute the supply chain steps (supply chain execution). **Supply chain planning systems** enable the firm to model its existing supply chain, generate demand forecasts for products, and develop optimal sourcing and manufacturing plans. Such systems help companies make better decisions, such as determining how much of a specific product to manufacture in a given time period; establishing inventory levels for raw materials, intermediate products, and finished goods; determining where to store finished goods; and identifying the transportation mode to use for product delivery.

For example, if a large customer places a larger order than usual or changes that order on short notice, it can have a widespread impact throughout the supply chain. Additional raw materials or a different mix of raw materials may need to be ordered from suppliers. Manufacturing may have to change job scheduling. A transportation carrier may have to reschedule deliveries. Supply chain planning software makes the necessary adjustments to production and

distribution plans. Information about changes is shared among the relevant supply chain members so that their work can be coordinated. One of the most important—and complex—supply chain planning functions is **demand planning**, which determines how much product a business needs to make to satisfy all its customers' demands. JDA Software, SAP, and Oracle all offer supply chain management solutions.

Supply chain execution systems manage the flow of products through distribution centers and warehouses to ensure that products are delivered to the right locations in the most efficient manner. They track the physical status of goods, the management of materials, warehouse and transportation operations, and financial information involving all parties. An example is the Warehouse Management System (WMS) that Haworth Incorporated uses. Haworth is a world-leading manufacturer and designer of office furniture, with distribution centers in four states. The WMS tracks and controls the flow of finished goods from Haworth's distribution centers to its customers. Acting on shipping plans for customer orders, the WMS directs the movement of goods based on immediate conditions for space, equipment, inventory, and personnel.

Global Supply Chains and the Internet

Before the Internet, supply chain coordination was hampered by the difficulties of making information flow smoothly among disparate internal supply chain systems for purchasing, materials management, manufacturing, and distribution. It was also difficult to share information with external supply chain partners because the systems of suppliers, distributors, or logistics providers were based on incompatible technology platforms and standards. Enterprise and supply chain management systems enhanced with Internet technology supply some of this integration.

A manager uses a web interface to tap into suppliers' systems to determine whether inventory and production capabilities match demand for the firm's products. Business partners use web-based supply chain management tools to collaborate online on forecasts. Sales representatives access suppliers' production schedules and logistics information to monitor customers' order status.

Global Supply Chain Issues

More and more companies are entering international markets, outsourcing manufacturing operations, and obtaining supplies from other countries as well as selling abroad. Their supply chains extend across multiple countries and regions. There are additional complexities and challenges to managing a global supply chain.

Global supply chains typically span greater geographic distances and time differences than domestic supply chains and have participants from a number of countries. Performance standards may vary from region to region or from nation to nation. Supply chain management may need to reflect foreign government regulations and cultural differences.

The Internet helps companies manage many aspects of their global supply chains, including sourcing, transportation, communications, and international finance. Today's apparel industry, for example, relies heavily on outsourcing to contract manufacturers in China and other low-wage countries. Apparel companies are starting to use the web to manage their global supply chain and production issues. (Review the discussion of Li & Fung in Chapter 3.)

In addition to contract manufacturing, globalization has encouraged outsourcing warehouse management, transportation management, and related

operations to third-party logistics providers, such as UPS Supply Chain Solutions and Schneider National. These logistics services offer web-based software to give their customers a better view of their global supply chains. Customers can check a secure website to monitor inventory and shipments, helping them run their global supply chains more efficiently.

Demand-Driven Supply Chains: From Push to Pull Manufacturing and Efficient Customer Response

In addition to reducing costs, supply chain management systems facilitate efficient customer response, enabling the workings of the business to be driven more by customer demand. (We introduced efficient customer response systems in Chapter 3.)

Earlier supply chain management systems were driven by a push-based model (also known as build-to-stock). In a **push-based model**, production master schedules are based on forecasts or best guesses of demand for products, and products are pushed to customers. With new flows of information made possible by web-based tools, supply chain management more easily follows a pull-based model. In a **pull-based model**, also known as a demand-driven or build-to-order model, actual customer orders or purchases trigger events in the supply chain. Transactions to produce and deliver only what customers have ordered move up the supply chain from retailers to distributors to manufacturers and eventually to suppliers. Only products to fulfill these orders move back down the supply chain to the retailer. Manufacturers use only actual order demand information to drive their production schedules and the procurement of components or raw materials, as illustrated in Figure 9.4. Walmart's continuous replenishment system described in Chapter 3 is an example of the pull-based model.

The Internet and Internet technology make it possible to move from sequential supply chains, where information and materials flow sequentially from company to company, to concurrent supply chains, where information flows in many directions simultaneously among members of a supply chain network. Complex supply networks of manufacturers, logistics suppliers, outsourced manufacturers, retailers, and distributors can adjust immediately to changes in schedules or orders. Ultimately, the Internet will enable a digital logistics nervous system for supply chains (see Figure 9.5).

FIGURE 9.4 PUSH- VERSUS PULL-BASED SUPPLY CHAIN MODELS

The difference between push- and pull-based models is summarized by the slogan "Make what we sell, not sell what we make."

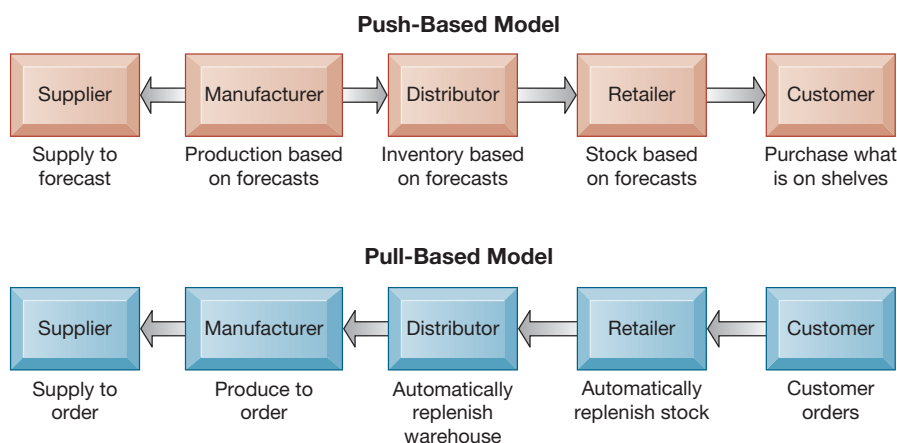
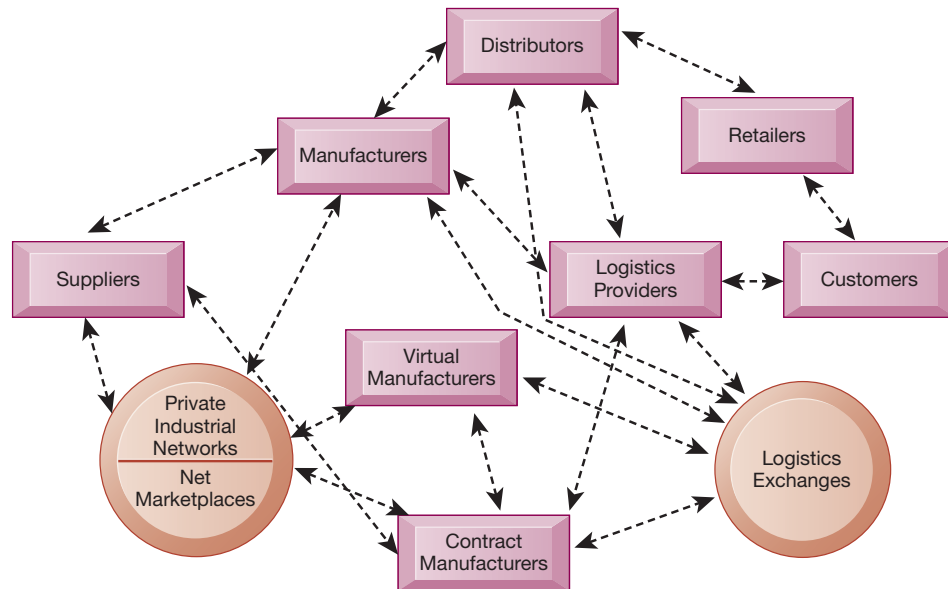


FIGURE 9.5 THE EMERGING INTERNET-DRIVEN SUPPLY CHAIN

The emerging Internet-driven supply chain operates like a digital logistics nervous system. It provides multidirectional communication among firms, networks of firms, and e-marketplaces so that entire networks of supply chain partners can immediately adjust inventories, orders, and capacities.



Business Value of Supply Chain Management Systems

You have just seen how supply chain management systems enable firms to streamline both their internal and external supply chain processes and provide management with more accurate information about what to produce, store, and move. By implementing a networked and integrated supply chain management system, companies match supply to demand, reduce inventory levels, improve delivery service, speed product time to market, and use assets more effectively.

Total supply chain costs represent the majority of operating expenses for many businesses and in some industries approach 75 percent of the total operating budget. Reducing supply chain costs has a major impact on firm profitability.

In addition to reducing costs, supply chain management systems help increase sales. If a product is not available when a customer wants it, customers often try to purchase it from someone else. More precise control of the supply chain enhances the firm's ability to have the right product available for customer purchases at the right time.

9-3 How do customer relationship management systems help firms achieve customer intimacy?

You've probably heard phrases such as "the customer is always right" or "the customer comes first." Today these words ring truer than ever. Because competitive advantage based on an innovative new product or service is often very short lived, companies are realizing that their most enduring competitive strength may be their relationships with their customers. Some say that the basis of competition

has switched from who sells the most products and services to who “owns” the customer and that customer relationships represent a firm’s most valuable asset.

What Is Customer Relationship Management?

What kinds of information would you need to build and nurture strong, long-lasting relationships with customers? You’d want to know exactly who your customers are, how to contact them, whether they are costly to service and sell to, what kinds of products and services they are interested in, and how much money they spend on your company. If you could, you’d want to make sure you knew each of your customers well, as if you were running a small-town store. And you’d want to make your good customers feel special.

In a small business operating in a neighborhood, it is possible for business owners and managers to know their customers well on a personal, face-to-face basis, but in a large business operating on a metropolitan, regional, national, or even global basis, it is impossible to know your customer in this intimate way. In these kinds of businesses, there are too many customers and too many ways that customers interact with the firm (over the web, the phone, email, blogs, and in person). It becomes especially difficult to integrate information from all these sources and deal with the large number of customers.

A large business’s processes for sales, service, and marketing tend to be highly compartmentalized, and these departments do not share much essential customer information. Some information on a specific customer might be stored and organized in terms of that person’s account with the company. Other pieces of information about the same customer might be organized by products that were purchased. In this traditional business environment, there is no convenient way to consolidate all this information to provide a unified view of a customer across the company.

This is where customer relationship management systems help. Customer relationship management (CRM) systems, which we introduced in Chapter 2, capture and integrate customer data from all over the organization, consolidate the data, analyze the data, and then distribute the results to various systems and customer touch points across the enterprise. A **touch point** (also known as a contact point) is a method of interaction with the customer, such as telephone, email, customer service desk, conventional mail, Facebook, Twitter, website, wireless device, or retail store. Well-designed CRM systems provide a single enterprise view of customers that is useful for improving both sales and customer service (see Figure 9.6.)

Good CRM systems provide data and analytical tools for answering questions such as these: What is the value of a particular customer to the firm over his or her lifetime? Who are our most loyal customers? Who are our most profitable customers? What do these profitable customers want to buy? Firms use the answers to these questions to acquire new customers, provide better service and support to existing customers, customize their offerings more precisely to customer preferences, and provide ongoing value to retain profitable customers.

Customer Relationship Management Software

Commercial CRM software packages range from niche tools that perform limited functions, such as personalizing websites for specific customers, to large-scale enterprise applications that capture myriad interactions with customers, analyze them with sophisticated reporting tools, and link to other major enterprise applications, such as supply chain management and enterprise systems. The more comprehensive CRM packages contain modules for **partner relationship management (PRM)** and **employee relationship management (ERM)**.

FIGURE 9.6 CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

CRM systems examine customers from a multifaceted perspective. These systems use a set of integrated applications to address all aspects of the customer relationship, including customer service, sales, and marketing.



PRM uses many of the same data, tools, and systems as customer relationship management to enhance collaboration between a company and its selling partners. If a company does not sell directly to customers but rather works through distributors or retailers, PRM helps these channels sell to customers directly. It provides a company and its selling partners with the ability to trade information and distribute leads and data about customers, integrating lead generation, pricing, promotions, order configurations, and availability. It also provides a firm with tools to assess its partners' performances so it can make sure its best partners receive the support they need to close more business.

ERM software deals with employee issues that are closely related to CRM, such as setting objectives, employee performance management, performance-based compensation, and employee training. Major CRM application software vendors include Oracle, SAP, Salesforce.com, and Microsoft Dynamics CRM.

Customer relationship management systems typically provide software and online tools for sales, customer service, and marketing. We briefly describe some of these capabilities.

Sales Force Automation

Sales force automation (SFA) modules in CRM systems help sales staff increase productivity by focusing sales efforts on the most profitable customers, those who are good candidates for sales and services. SFA modules provide sales prospect and contact information, product information, product configuration capabilities, and sales quote generation capabilities. Such software can assemble information about a particular customer's past purchases to help the salesperson make personalized recommendations. SFA modules enable sales, marketing, and shipping departments to share customer and prospect information easily. SFA increases each salesperson's efficiency by reducing the cost per sale as well as the cost of acquiring new customers and retaining old ones. SFA modules also provide capabilities for sales forecasting, territory management, and team selling.

Customer Service

Customer service modules in CRM systems provide information and tools to increase the efficiency of call centers, help desks, and customer support staff. They have capabilities for assigning and managing customer service requests.

One such capability is an appointment or advice telephone line. When a customer calls a standard phone number, the system routes the call to the correct service person, who inputs information about that customer into the system only once. When the customer's data are in the system, any service representative can handle the customer relationship. Improved access to consistent and accurate customer information helps call centers handle more calls per day and decrease the duration of each call. Thus, call centers and customer service groups achieve greater productivity, reduced transaction time, and higher quality of service at lower cost. The customer is happier because he or she spends less time on the phone restating his or her problem to customer service representatives.

CRM systems may also include web-based self-service capabilities: The company website can be set up to provide inquiring customers personalized support information as well as the option to contact customer service staff by phone for additional assistance.

Marketing

CRM systems support direct-marketing campaigns by providing capabilities for capturing prospect and customer data, for providing product and service information, for qualifying leads for targeted marketing, and for scheduling and tracking direct-marketing mailings or email (see Figure 9.7). Marketing modules also include tools for analyzing marketing and customer data, identifying profitable and unprofitable customers, designing products and services to satisfy specific customer needs and interests, and identifying opportunities for cross-selling.

Cross-selling is the marketing of complementary products to customers. (For example, in financial services, a customer with a checking account might be sold a money market account or a home improvement loan.) CRM tools also

FIGURE 9.7 HOW CRM SYSTEMS SUPPORT MARKETING

Customer relationship management software provides a single point for users to manage and evaluate marketing campaigns across multiple channels, including email, direct mail, telephone, the web, and social media.

**Responses by Channel for January 2019
Promotional Campaign**

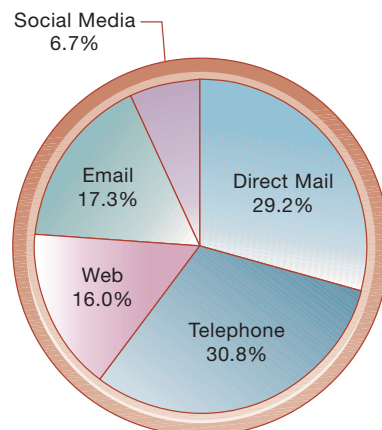
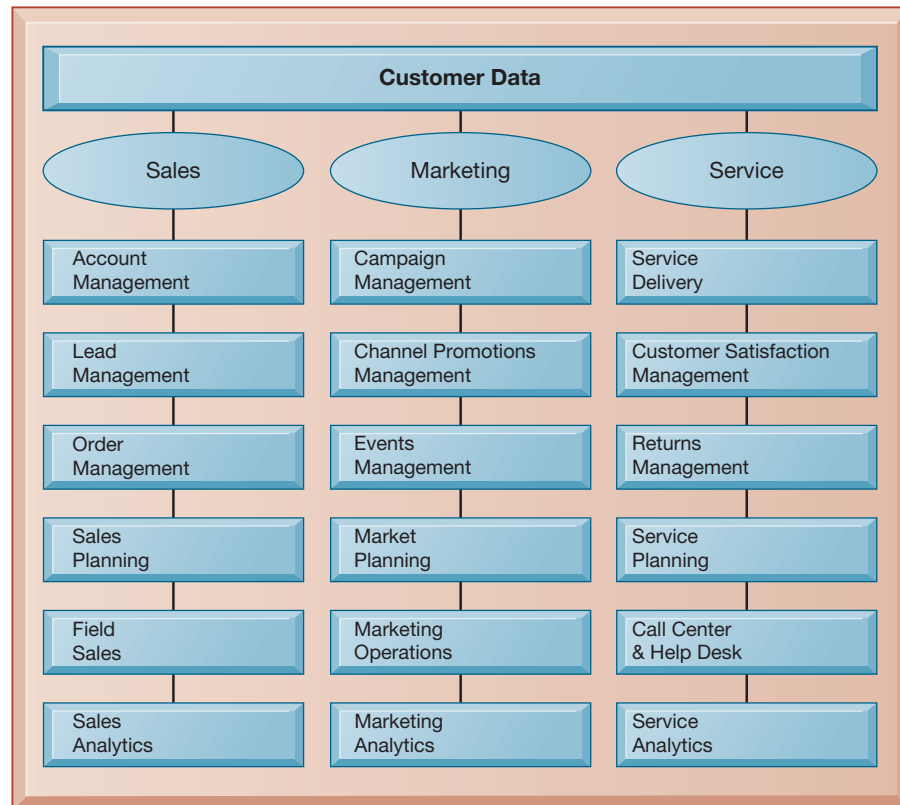


FIGURE 9.8 CRM SOFTWARE CAPABILITIES

The major CRM software products support business processes in sales, service, and marketing, integrating customer information from many sources. Included is support for both the operational and analytical aspects of CRM.



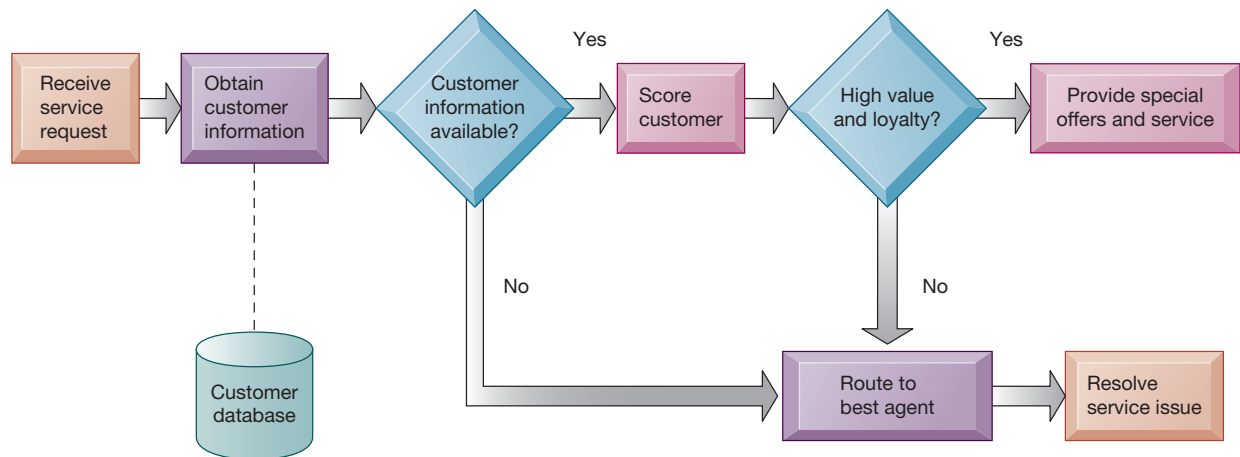
help firms manage and execute marketing campaigns at all stages, from planning to determining the rate of success for each campaign.

Figure 9.8 illustrates the most important capabilities for sales, service, and marketing processes found in major CRM software products. Like enterprise software, this software is business-process driven, incorporating hundreds of business processes thought to represent best practices in each of these areas. To achieve maximum benefit, companies need to revise and model their business processes to conform to the best-practice business processes in the CRM software.

Figure 9.9 illustrates how a best practice for increasing customer loyalty through customer service might be modeled by CRM software. Directly servicing customers provides firms with opportunities to increase customer retention by singling out profitable long-term customers for preferential treatment. CRM software can assign each customer a score based on that person's value and loyalty to the company and provide that information to help call centers route each customer's service request to agents who can best handle that customer's needs. The system would automatically provide the service agent with a detailed profile of that customer that includes his or her score for value and loyalty. The service agent would use this information to present special offers or additional services to the customer to encourage the customer to keep transacting business with the company. You will find more information on other best-practice business processes in CRM systems in our Learning Tracks.

FIGURE 9.9 CUSTOMER LOYALTY MANAGEMENT PROCESS MAP

This process map shows how a best practice for promoting customer loyalty through customer service would be modeled by customer relationship management software. The CRM software helps firms identify high-value customers for preferential treatment.



Operational and Analytical CRM

All of the applications we have just described support either the operational or analytical aspects of customer relationship management. **Operational CRM** includes customer-facing applications, such as tools for sales force automation, call center and customer service support, and marketing automation. **Analytical CRM** includes applications that analyze customer data generated by operational CRM applications to provide information for improving business performance.

Analytical CRM applications are based on data from operational CRM systems, customer touch points, and other sources that have been organized in data warehouses or analytic platforms for use in online analytical processing (OLAP), data mining, and other data analysis techniques (see Chapter 6). Customer data collected by the organization might be combined with data from other sources, such as customer lists for direct-marketing campaigns purchased from other companies or demographic data. Such data are analyzed to identify buying patterns, to create segments for targeted marketing, and to pinpoint profitable and unprofitable customers (see Figure 9.10).

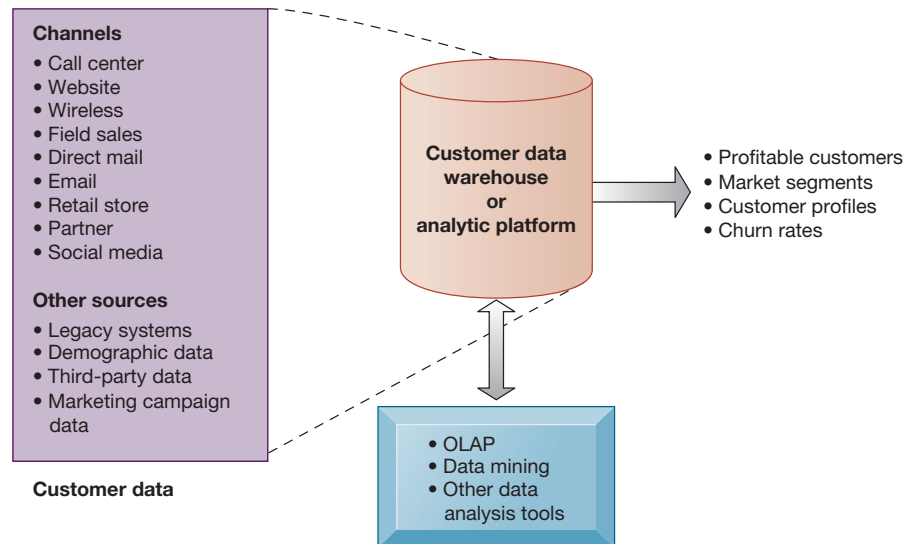
Another important output of analytical CRM is the customer's lifetime value to the firm. **Customer lifetime value (CLTV)** is based on the relationship between the revenue produced by a specific customer, the expenses incurred in acquiring and servicing that customer, and the expected life of the relationship between the customer and the company.

Business Value of Customer Relationship Management Systems

Companies with effective customer relationship management systems realize many benefits, including increased customer satisfaction, reduced direct-marketing costs, more effective marketing, and lower costs for customer acquisition and retention. Information from CRM systems increases sales revenue

FIGURE 9.10 ANALYTICAL CRM

Analytical CRM uses a customer data warehouse or analytic platform and tools to analyze customer data collected from the firm's customer touch points and from other sources.



by identifying the most profitable customers and segments for focused marketing and cross-selling (see the Interactive Session on Organizations).

Customer churn is reduced as sales, service, and marketing respond better to customer needs. The **churn rate** measures the number of customers who stop using or purchasing products or services from a company. It is an important indicator of the growth or decline of a firm's customer base.

9-4 What are the challenges that enterprise applications pose, and how are enterprise applications taking advantage of new technologies?

Many firms have implemented enterprise systems and systems for supply chain and customer relationship management because they are such powerful instruments for achieving operational excellence and enhancing decision making. But precisely because they are so powerful in changing the way the organization works, they are challenging to implement. Let's briefly examine some of these challenges as well as new ways of obtaining value from these systems.

Enterprise Application Challenges

Promises of dramatic reductions in inventory costs, order-to-delivery time, more efficient customer response, and higher product and customer profitability make enterprise systems and systems for SCM and CRM very alluring. But to obtain this value, you must clearly understand how your business has to change to use these systems effectively.

Enterprise applications involve complex pieces of software that are very expensive to purchase and implement. It might take a large *Fortune* 500 company several years to complete a large-scale implementation of an enterprise system

INTERACTIVE SESSION ORGANIZATIONS

Kenya Airways Flies High with Customer Relationship Management

Kenya Airways is the flag carrier of Kenya and ranks among the top ten African airlines in terms of seat capacity, with a fleet of 33 aircraft covering 53 destinations domestically and abroad. It is the only African airline in the SkyTeam alliance, whose 20 members include Delta Airlines, Air France, Alitalia, Aeromexico, China Airlines, and Korean Air, and is expected to live up to a very high global standard.

One area of the business that needed improvement was the airline's relationship to its customers. Africa's current population of 1 billion is expected to reach 1.5 billion within a decade, with a rapidly growing middle class in many countries. Until recently, Kenya Airways was unable to fully capitalize on this market opportunity because it didn't know enough about its customers. Although the airline had added more planes, passenger numbers had been decreasing, partly due to the fear of Ebola virus outbreaks, regional terrorism, and increased competition from Persian Gulf carriers. Profitability suffered.

The airline didn't know who clicked on its email campaigns. It was advertising mostly on billboards, in newspapers, and on flyers, with no way to measure the effectiveness of those campaigns. Management could not tell what its sales representatives in different offices were doing. Data on customers were located in many different repositories, such as spreadsheets and files in company and partner travel agent offices, reservation systems, and airport check-ins, and the data were not integrated. Without a single repository for customer data, Kenya Airways was unable to identify the preferences, special needs, or other personal characteristics of its "guests," who included commercial traders, business executives, government officials, students, missionaries, and medical tourists. Marketing, sales, and customer service activities were operating in the dark. For example, each May the airline would send every customer in its scattered data repositories a Mother's Day greeting, although many of the recipients were not mothers.

In 2014 Kenya Airways initiated a multiyear program to automate and integrate all of its customer data so that it could engage in effective customer relationship management using Oracle's Marketing, Sales, Data, and Service Clouds. Oracle Marketing Cloud provides a cloud-based platform to connect

firms' marketing data, centrally orchestrate cross-channel customer interactions, engage the right audience, and analyze performance. It includes tools for managing marketing automation campaigns, providing cross-channel customer experiences, creating and managing engaging content, "listening" to customer conversations about a product, brand or service, and engaging with messaging (social marketing).

A few weeks after implementing Oracle Marketing Cloud, the airline ran its first automated marketing campaign, which directed emails, SMS texts, and social media posts about special holiday season fares to Kenyan emigrants in Dubai. Kenya Airways then created campaigns to promote new and expanded routes to Hanoi and Zanzibar. As time went on, the airline's marketing team became more skillful at tracking revenue flows generated by those campaigns and identifying new sources of data to target the campaigns more effectively. Kenya Airways Marketing Automation Lead, Harriet Luyai, reported in early 2015 that "reachable contacts" rose from 40 percent to 89 percent, open rates on marketing emails rose from 40 percent to 65 percent, and the airline's "acquisition rate"—the percentage of respondents who opt in to its campaigns—was up to 20 percent. The airline can measure the impact of marketing campaigns on ticket sales. Campaigns that previously took three days to execute using an agency now take 30 minutes and are much less expensive.

After implementing Oracle Marketing Cloud, Kenya Airways started using Oracle Sales Cloud to automate its sales activities and Oracle RightNow Cloud Service for its customer service activities, linking all three clouds in one central data repository. Marketing, sales, and service could now integrate their customer data and coordinate business processes. The airline pulled together information on age, income, education level, job function, job level, revenue generated for the airline, geography, status, preferences, interest areas, service calls, email activity, form submissions, and purchase history to help it create very detailed customer profiles for personalizing offerings.

To help the Kenya Airways marketing team drive additional revenue by converting leads to ticket sales, increasing website traffic, and increasing social followers, the airline implemented Oracle Social Cloud.

This tool helps the Kenya Airways customer service team follow social media posts and discussions about the airline's services and respond to questions and problems within 30 minutes. It also helps agents prioritize their follow-up posts and manage workflows for the appropriate approvals and for troubleshooting.

Although Kenya Airways had a customer loyalty program, it had previously been unable to identify high-value customers. Now Kenya Airways can track all its high-value customers and show how much revenue each customer generates. It can also segment customers across the customer life cycle, making it possible to distinguish a new customer from a longtime high-value customer. Kenya Airways now has a 360-degree view of each of its customers.

It took much more time to implement the Oracle Cloud suite than Kenya Airways had

originally estimated—more than a year instead of six months. The required data, which resided in many different applications, needed to be cleansed to make sure they were all in the right format before they could be transferred to the new data repository. Much of this work was manual. Airline staff had to be trained in new ways of working with digital CRM tools because so much of its work had previously been manual. Kenya Airways management feels the airline has been richly rewarded for this effort.

Sources: "Company View of Kenya Airways PLC," www.bloomberg.com, accessed January 31, 2018; Rob Preston, "First-Class Flight," *Profit Magazine*, August 2016; www.kenya-airways.com, accessed January 31, 2018; "Kenya Airways Turns to McKinsey for Turn-around Strategy," Consultancy.uk, February 8, 2016; and Tilde Herrera, "Kenya Airways Fuels with Data to Lift Marketing," October 29, 2015.

CASE STUDY QUESTIONS

1. What was the problem at Kenya Airways described in this case? What management, organization, and technology factors contributed to this problem?
2. What was the relationship of customer relationship management to Kenya Airways' business performance and business strategy?
3. Describe Kenya Airways' solution to its problem. What management, organization, and technology issues had to be addressed by the solution?
4. How effective was this solution? How did it affect the way Kenya Airways ran its business and its business performance?

or a system for SCM or CRM. According to a 2018 survey of 237 ERP users conducted by Panorama Consulting Solutions, ERP projects took an average of 17.4 months to complete, and 44 percent of the projects delivered 50 percent or less of the expected benefits. Approximately 64 percent of these projects experienced cost overruns, and 79 percent exceeded their initial timelines (Panorama Consulting Solutions, 2018). Changes in project scope and additional customization work add to implementation delays and costs.

Enterprise applications require not only deep-seated technological changes but also fundamental changes in the way the business operates. Companies must make sweeping changes to their business processes to work with the software. Employees must accept new job functions and responsibilities. They must learn how to perform a new set of work activities and understand how the information they enter into the system can affect other parts of the company. This requires new organizational learning and should also be factored into ERP implementation costs.

SCM systems require multiple organizations to share information and business processes. Each participant in the system may have to change some of its processes and the way it uses information to create a system that best serves the supply chain as a whole.

Some firms experienced enormous operating problems and losses when they first implemented enterprise applications because they didn't understand how much organizational change was required. For example, Kmart had trouble

getting products to store shelves when it first implemented i2 Technologies (now JDA Software) SCM software. The i2 software did not work well with Kmart's promotion-driven business model, which created sharp spikes in demand for products. Supermarket giant Woolworth's Australia encountered data-related problems when it transitioned from an antiquated home-grown ERP system to SAP. Weekly profit-and-loss reports tailored for individual stores couldn't be generated for nearly 18 months. The company had to change its data collection procedures, but failed to understand its own processes or properly document these business processes.

Enterprise applications also introduce switching costs. When you adopt an enterprise application from a single vendor, such as SAP, Oracle, or others, it is very costly to switch vendors, and your firm becomes dependent on the vendor to upgrade its product and maintain your installation.

Enterprise applications are based on organization-wide definitions of data. You'll need to understand exactly how your business uses its data and how the data would be organized in a CRM, SCM, or ERP system. CRM systems typically require some data cleansing work.

Enterprise software vendors are addressing these problems by offering pared-down versions of their software and fast-start programs for small and medium-sized businesses and best-practice guidelines for larger companies. Companies are also achieving more flexibility by using cloud applications for functions not addressed by the basic enterprise software so that they are not constrained by a single do-it-all type of system.

Companies adopting enterprise applications can also save time and money by keeping customizations to a minimum. For example, Kennametal, a \$2 billion metal-cutting tools company in Pennsylvania, had spent \$10 million over 13 years maintaining an ERP system with more than 6,400 customizations. The company replaced it with a plain-vanilla, uncustomized version of SAP enterprise software and changed its business processes to conform to the software. Office Depot avoided customization when it moved from in-house systems to the Oracle ERP Cloud. The retailer is using best practices embedded in Oracle's Supply Chain Management Cloud and in its cloud-based Human Capital Management (HCM) and Enterprise Performance Management (EPM) systems. By not customizing its Oracle ERP applications, Office Depot simplified its information systems and reduced the cost of maintaining and managing them (Thibodeau, 2018).

Next-Generation Enterprise Applications

Today, enterprise application vendors are delivering more value by becoming more flexible, user-friendly, web-enabled, mobile, and capable of integration with other systems. Stand-alone enterprise systems, customer relationship management systems, and SCM systems are becoming a thing of the past. The major enterprise software vendors have created what they call *enterprise solutions*, *enterprise suites*, or e-business suites to make their CRM, SCM, and ERP systems work closely with each other and link to systems of customers and suppliers.

Next-generation enterprise applications also include cloud solutions as well as more functionality available on mobile platforms. Large enterprise software vendors such as SAP, Oracle, Microsoft, and Epicor now feature cloud versions of their flagship ERP systems and also cloud-based products for small and medium-sized businesses (as described earlier in the Interactive Session on Management). SAP, for example, offers SAP S/4HANA Cloud for large companies, and SAP Business ByDesign and SAP Business One enterprise software for medium-sized and small businesses. Microsoft offers the Dynamics 365 cloud

version of its ERP and CRM software. Cloud-based enterprise systems are also offered by smaller vendors such as NetSuite.

The undisputed global market leader in cloud-based CRM systems is Salesforce.com, which we described in Chapter 5. Salesforce.com delivers its service through Internet-connected computers or mobile devices, and it is widely used by small, medium-sized, and large enterprises. As cloud-based products mature, more companies, including very large *Fortune* 500 firms, are choosing to run all or part of their enterprise applications in the cloud.

Social CRM

CRM software vendors are enhancing their products to take advantage of social networking technologies. These social enhancements help firms identify new ideas more rapidly, improve team productivity, and deepen interactions with customers (see Chapter 10). Using **social CRM** tools, businesses can better engage with their customers by, for example, analyzing their sentiments about their products and services.

Social CRM tools enable a business to connect customer conversations and relationships from social networking sites to CRM processes. The leading CRM vendors now offer such tools to link data from social networks to their CRM software. SAP, Salesforce.com, and Oracle CRM products now feature technology to monitor, track, and analyze social media activity on Facebook, LinkedIn, Twitter, YouTube, and other sites. Business intelligence and analytics software vendors such as SAS also have capabilities for social media analytics (with several measures of customer engagement across a variety of social networks) along with campaign management tools for testing and optimizing both social and traditional web-based campaigns.

Salesforce.com connected its system for tracking leads in the sales process with social-listening and social-media marketing tools, enabling users to tailor their social-marketing dollars to core customers and observe the resulting comments. If an ad agency wants to run a targeted Facebook or Twitter ad, these capabilities make it possible to aim the ad specifically at people in the client's lead pipeline who are already being tracked in the CRM system. Users will be able to view tweets as they take place in real time and perhaps uncover new leads. They can also manage multiple campaigns and compare them all to figure out which ones generate the highest click-through rates and cost per click.

Business Intelligence in Enterprise Applications

Enterprise application vendors have added business intelligence features to help managers obtain more meaningful information from the massive amounts of data these systems generate, including data from the Internet of Things (IoT). SAP now makes it possible for its enterprise applications to use HANA in-memory computing technology so that they are capable of much more rapid and complex data analysis. Included are tools for flexible reporting; ad hoc analysis; interactive dashboards; what-if scenario analysis; data visualization; and machine learning to analyze very large bodies of data, make connections, make predictions, and provide recommendations for operations optimization. For example, SAP created a machine learning and neural network application (see Chapter 11) that recognizes patterns associated with machine performance in the oil and gas industry. The software automatically generates notifications of potential machine failures and sends them to SAP Plant Maintenance, which planners use to schedule machine repair and replacement (Franken, 2018).

The major enterprise application vendors offer portions of their products that work on mobile handhelds. You can find out more about this topic in our Learning Track on Wireless Applications for Customer Relationship Management, Supply Chain Management, and Healthcare.

9-5 How will MIS help my career?



Here is how Chapter 9 and this book can help you find a job as a manufacturing management trainee.

The Company

XYZ Global Industrial Components is a large Michigan-headquartered company with 40 global manufacturing facilities and more than 4,000 employees worldwide, and it has an open position for a new college graduate in its Manufacturing Management Program. The company produces fastener, engineered, and linkage and suspension components for automotive, heavy-duty trucks, aerospace, electric utility, telecommunications, and other industries worldwide.

Position Description

The Manufacturing Management Program is a rotational, two-year program designed to nurture and train future managers by enabling recent college graduates to acquire critical skills and industry experience in plant, technical, and corporate environments. Job responsibilities include:

- Working with business units and project teams on systems implementation, including implementation of ERP and JDA manufacturing systems.
- Understanding business processes and data requirements for each business unit.
- Proficiency in supporting and conducting business requirement analysis sessions.
- Tracking and documenting changes to functional and business specifications.
- Writing user documentation, instructions, and procedures.
- Monitoring and documenting post-implementation problems and revision requests.

Job Requirements

- Bachelor's degree in IT, MIS, engineering, or related field or equivalent, with a GPA higher than 3.0
- Demonstrated skills in Microsoft Office Suite
- Strong written and verbal communication skills
- Proven track record of accomplishments both inside and outside the educational setting
- Experience in a leadership role in a team

Interview Questions

- Describe the projects you have worked on in a team. Did you play a leadership role? Exactly what did you do to help your team achieve its goal? Were any of these projects IT projects?
- What do you know about ERP or JDA manufacturing systems? Have you ever worked with them? What exactly did you do with these systems?
- Tell us what you can do with Microsoft Office software. Which tools have you used? Do you have any Access and Excel skills? What kinds of problems have you used these tools to solve? Did you take courses in Access or Excel?

Author Tips

1. Do some research on the company, its industry, and the kinds of challenges it faces. Look through the company's LinkedIn page and read their posts over the past twelve months. Are there any key trends in the LinkedIn posts for this company?
2. Review this text's Chapter 9 on enterprise applications, Chapter 13 on developing systems, and Chapter 14 on IT project management and implementation.
3. View YouTube videos created by major IT consulting firms that discuss the latest trends in manufacturing technology and enterprise systems.
4. Inquire how you would be using Microsoft Office tools for the job and what Excel and Access skills you would be expected to demonstrate. Bring examples of the work you have done with this software. Show that you would be eager to learn what you don't know about these tools to fulfill your job assignments.
5. Bring examples of your writing (including some from your Digital Portfolio described in MyLab MIS) demonstrating your analytical skills and project experience.

REVIEW SUMMARY

9-1 How do enterprise systems help businesses achieve operational excellence?

Enterprise software is based on a suite of integrated software modules and a common central database. The database collects data from and feeds the data into numerous applications that can support nearly all of an organization's internal business activities. When one process enters new information, the information is made available immediately to other business processes.

Enterprise systems support organizational centralization by enforcing uniform data standards and business processes throughout the company and a single unified technology platform. The firmwide data that enterprise systems generate help managers evaluate organizational performance.

9-2 How do supply chain management systems coordinate planning, production, and logistics with suppliers?

Supply chain management (SCM) systems automate the flow of information among members of the supply chain so they can use it to make better decisions about when and how much to purchase, produce, or ship. More accurate information from supply chain management systems reduces uncertainty and the impact of the bullwhip effect.

Supply chain management software includes software for supply chain planning and for supply chain execution. Internet technology facilitates the management of global supply chains by providing the connectivity for organizations in different countries to share supply chain information. Improved communication among supply chain members also facilitates efficient customer response and movement toward a demand-driven model.

9-3 How do customer relationship management systems help firms achieve customer intimacy?

Customer relationship management (CRM) systems integrate and automate customer-facing processes in sales, marketing, and customer service, providing an enterprise-wide view of customers. Companies can use this customer knowledge when they interact with customers to provide them with better service or sell new products and services. These systems also identify profitable or unprofitable customers or opportunities to reduce the churn rate.

The major customer relationship management software packages provide capabilities for both operational CRM and analytical CRM. They often include modules for managing relationships with selling partners (partner relationship management) and for employee relationship management.

9-4 What are the challenges that enterprise applications pose, and how are enterprise applications taking advantage of new technologies?

Enterprise applications are difficult to implement. They require extensive organizational change, large new software investments, and careful assessment of how these systems will enhance organizational performance. Enterprise applications cannot provide value if they are implemented atop flawed processes or if firms do not know how to use these systems to measure performance improvements. Employees require training to prepare for new procedures and roles. Attention to data management is essential.

Enterprise applications are now more flexible, web-enabled, and capable of integration with other systems, using web services and service-oriented architecture (SOA). They also can run in cloud infrastructures or on mobile platforms. CRM software has added social networking capabilities to enhance internal collaboration, deepen interactions with customers, and use data from social networking sites. Enterprise applications are incorporating business intelligence capabilities for analyzing the large quantities of data they generate.

Key Terms

Analytical CRM, 357

Bullwhip effect, 348

Churn rate, 358

Cross-selling, 355

Customer lifetime value (CLTV), 357

Demand planning, 350

Employee relationship management (ERM), 353

Enterprise software, 342

Just-in-time strategy, 348

Operational CRM, 357

Partner relationship management (PRM), 353

Pull-based model, 351

Push-based model, 351

Sales force automation (SFA), 354

Social CRM, 362

Supply chain, 346

Supply chain execution systems, 350

Supply chain planning systems, 349

Touch point, 353

MyLab MIS

To complete the problems with MyLab MIS, go to the EOC Discussion Questions in MyLab MIS.

Review Questions**9-1 How do enterprise systems help businesses achieve operational excellence?**

- Define an enterprise system and explain how enterprise software works.
- Describe how enterprise systems provide value for a business.

9-2 How do supply chain management systems coordinate planning, production, and logistics with suppliers?

- Define a supply chain and identify each of its components.
- Explain how supply chain management systems help reduce the bullwhip effect and how they provide value for a business.
- Define and compare supply chain planning systems and supply chain execution systems.
- Describe the challenges of global supply chains and how Internet technology can help companies manage them better.

- Distinguish between a push-based and a pull-based model of supply chain management and explain how contemporary supply chain management systems facilitate a pull-based model.

9-3 How do customer relationship management systems help firms achieve customer intimacy?

- Define customer relationship management and explain why customer relationships are so important today.
- Describe how partner relationship management (PRM) and employee relationship management (ERM) are related to customer relationship management (CRM).
- Describe the tools and capabilities of customer relationship management software for sales, marketing, and customer service.
- Distinguish between operational and analytical CRM.

9-4 What are the challenges that enterprise applications pose, and how are enterprise applications taking advantage of new technologies?

- List and describe the challenges enterprise applications pose.
- Explain how these challenges can be addressed.

- Describe how enterprise applications are taking advantage of cloud computing and business intelligence.
- Define social CRM and explain how customer relationship management systems are using social networking.

Discussion Questions

9-5 MyLab MIS Supply chain management is less about managing the physical movement of goods and more about managing information. Discuss the implications of this statement.

9-6 MyLab MIS If a company wants to implement an enterprise application, it had better do

its homework. Discuss the implications of this statement.

9-7 MyLab MIS Which enterprise application should a business install first: ERP, SCM, or CRM? Explain your answer.

Hands-On MIS Projects

The projects in this section give you hands-on experience analyzing business process integration, suggesting supply chain management and customer relationship management applications, using database software to manage customer service requests, and evaluating supply chain management business services. Visit MyLab MIS to access this chapter's Hands-On MIS Projects,

Management Decision Problems

9-8 Toronto-based Mercedes-Benz Canada, with a network of 55 dealers, did not know enough about its customers. Dealers provided customer data to the company on an ad hoc basis. Mercedes did not force dealers to report this information. There was no real incentive for dealers to share information with the company. How could CRM and PRM systems help solve this problem?

9-9 Office Depot sells a wide range of office supply products and services in the United States and internationally. The company tries to offer a wider range of office supplies at lower cost than other retailers by using just-in-time replenishment and tight inventory control systems. It uses information from a demand forecasting system and point-of-sale data to replenish its inventory in its 1,600 retail stores. Explain how these systems help Office Depot minimize costs and any other benefits they provide. Identify and describe other supply chain management applications that would be especially helpful to Office Depot.

Improving Decision Making: Using Database Software to Manage Customer Service Requests

Software skills: Database design; querying and reporting

Business skills: Customer service analysis

9-10 In this exercise, you'll use database software to develop an application that tracks customer service requests and analyzes customer data to identify customers meriting priority treatment.

Prime Service is a large service company that provides maintenance and repair services for close to 1,200 commercial businesses in New York, New Jersey, and Connecticut. Its customers include businesses of all sizes. Customers with service needs call into its customer service department with requests for repairing heating ducts, broken windows, leaky roofs, broken water pipes, and other problems. The company assigns each request a number and writes down the service request number, the identification number of the customer account, the date of the request, the type of equipment requiring repair, and a brief description of the problem. The service requests

are handled on a first-come-first-served basis. After the service work has been completed, Prime calculates the cost of the work, enters the price on the service request form, and bills the client. This arrangement treats the most important and profitable clients—those with accounts of more than \$70,000—no differently from its clients with small accounts. Management would like to find a way to provide its best customers with better service. It would also like to know which types of service problems occur most frequently so that it can make sure it has adequate resources to address them.

Prime Service has a small database with client account information, which can be found in MyLab MIS. Use database software to design a solution that would enable Prime's customer service representatives to identify the most important customers so that they could receive priority service. Your solution will require more than one table. Populate your database with at least 10 service requests. Create several reports that would be of interest to management, such as a list of the highest—and lowest—priority accounts and a report showing the most frequently occurring service problems. Create a report listing service calls that customer service representatives should respond to first on a specific date.

Achieving Operational Excellence: Evaluating Supply Chain Management Services

Software skills: Web browser and presentation software

Business skills: Evaluating supply chain management services

9-11 In addition to carrying goods from one place to another, some trucking companies provide supply chain management services and help their customers manage their information. In this project, you'll use the web to research and evaluate two of these business services. Investigate the websites of two companies, UPS and Schneider National, to see how these companies' services can be used for supply chain management. Then respond to the following questions:

- What supply chain processes can each of these companies support for its clients?
- How can customers use the websites of each company to help them with supply chain management?
- Compare the supply chain management services these companies provide. Which company would you select to help your firm manage its supply chain? Why?

Collaboration and Teamwork Project

Analyzing Enterprise Application Vendors

9-12 With a group of three or four other students, use the web to research and evaluate the products of two vendors of enterprise application software. You could compare, for example, the SAP and Oracle enterprise systems, the supply chain management systems from JDA Software and SAP, or the customer relationship management systems of Oracle and Salesforce.com. Use what you have learned from these companies' websites to compare the software products you have selected in terms of business functions supported, technology platforms, cost, and ease of use. Which vendor would you select? Why? Would you select the same vendor for a small business (50–300 employees) as well as for a large one? If possible, use Google Docs and Google Drive or Google Sites to brainstorm, organize, and develop a presentation of your findings for the class.

Clemens Food Group Delivers with New Enterprise Applications

CASE STUDY

Clemens Food Group is known for helping its customers bring home the bacon, and other products as well. Based in Hatfield, Pennsylvania, Clemens Food is a vertically coordinated company that includes antibiotic-free hog farming, food production, logistical services, and transportation. Using a responsive pork production system, the company focuses on supplying the highest-quality products to its partners as well as advanced solutions that simplify partners' operations.

The Clemens Food Group family of services and brands include pork product producers Hatfield Quality Meats and Nick's Sausage Company, as well as logistics and transportation firms (PV Transport), and CFC Logistics Country View Family Farms, a hog procurement and production company managing over 100 family farms raising hogs under contract. Clemens Food Group products are sold by grocers and food service operators in the northeastern and mid-Atlantic regions of the United States. The Clemens Food Group raises and processes about five million hogs per year, managing procurement, production, and logistics services from birth to finished food products. Clemens has 3,350 employees.

For a company in the perishable goods industry such as Clemens Food to be profitable, it must have a firm grasp on the timeliness and accuracy of orders and very precise information about the status of its products and warehouse activities throughout its network of farms and production facilities. Accuracy in determining yields, costs, and prices in a wildly fluctuating market can make a difference of millions of dollars. Unfortunately, Clemens Food's legacy systems were no longer able to keep up with production and support future growth. Management realized the company needed a new platform to provide better visibility into production, more efficient planning, and tighter control of available-to-promise processes. (Available-to-promise [ATP] provides a response to customer order inquiries, generating available quantities of the requested product and delivery due dates.) Clemens Food also wanted real-time information about plant profitability, including daily profitability margins on an order-by-order basis.

In 2010, Clemens Food created a five-year plan to modernize its IT infrastructure with an integrated

platform for systems to optimize its supply network and improve scheduling, optimization, and margin visibility in its multi-business operations. The plan gained steam in 2014 when Clemens Food announced it would develop a third pork processing plant comprising 550,000 square feet in Coldwater Township, Michigan. The addition of this facility could significantly increase volume and double revenue if it was backed by a more modern IT platform. Clemens Food's existing ERP system needed to be replaced by one that could handle increased volume and multi-plant complexities.

Joshua Rennells, Senior Vice President at Clemens Food Group, and his team extensively researched new technologies. A key requirement was to use proven best technology for what works in the perishable food industry. Where there is market volatility and inherent risks in selling a perishable product, precise information on yields and costs is especially important. Clemens Food believed SAP software was the best solution for helping the company achieve growth targets and share data across organizational boundaries with a fully integrated state-of-the-art system, and Rennells believed that the SAP S/4HANA platform would not require another significant upgrade for 15 years.

SAP S/4HANA is a business suite that is based on the SAP HANA in-memory computing platform. It features enterprise resource planning software meant to cover all day-to-day processes of an enterprise and also integrates portions of SAP Business Suite products for customer relationship management, supplier relationship management, and supply chain management. SAP S/4HANA is available in on-premises, cloud, and hybrid computing platforms.

Rather than implement the new system incrementally, Clemens Food chose to implement SAP S/4HANA Finance, along with functionality for materials management and production planning in a sweeping "big-bang" approach across the enterprise. The new system needed to be operational in time for the opening of the Coldwater plant. According to Rennells, Clemens Food had used a phased approach for its previous ERP implementation 15 years earlier. That prior rollout ended up taking several years and resulted in heavy customization. By the time Clemens Food migrated to SAP S/4HANA, its legacy ERP system was linked to more than 70 applications.

Taking a big-bang approach was the only way to be up and running before the Coldwater plant went live.

Being in the perishables industry made it imperative for Clemens Food to have master data in place when the new system went live to avoid disruptions to production or shipping capabilities. (Master data play a key role in the core operation of a business, such as data about customers, employees, inventory, or suppliers, and are typically shared by multiple users and groups across an organization.) The master data in Clemens Food's legacy system had quite a few flaws that showed up in testing. Clemens Food needed a rigorous master data cleansing effort.

Clemens Food selected intelligence Group implementation consultants to help with its master data and other migration issues. intelligence Group is a global SAP Platinum Partner with over 25 years of experience. It offers a full range of services from implementation consulting to managed services for its clients. Clemens Food Group identified intelligence as a partner with deep SAP food-specific knowledge and experience, including fresh and processed meat. intelligence Group had a proprietary Hog Procurement solution available for Clemens that helped deliver an on-time and on-budget project with minimal disruption to the business.

intelligence Group had experience guiding other meat-processing companies through similar large-scale implementations. Rennells wanted intelligence to act as business process experts to help Clemens Food re-examine the way it did things. Clemens Food followed intelligence's suggestions about modifications, budget management, the overall testing cycle, and the philosophy of implementation.

One especially valuable piece of project guidance from intelligence was to encourage project members to see the implementation as being led by the business rather than just an IT project. Clemens Foods started out with the project being IT-led, but after five months assigned internal leaders of the business to be the project leads. That switch forced the project team to be more objective through all the different testing phases. After each testing cycle, they had objective scoring from the dedicated team leads who viewed the project as a business process improvement. That helped the project team move closer to a finished product, rather than waiting until going live to find out it missed the mark. Including the business as equal partners when updates were instituted helped ensure that customizations were avoided.

Two Clemens Food production plants went live on SAP S/4HANA in May 2017, three months before the

Coldwater facility began operations. There were no business disruptions. To avoid disruption of production or shipping capabilities, the company had built in some planned downtime for production to address any issues with shipping or procurement, which are tied to the Coldwater plant's main distribution system. The planned downtime also ensured that any master data flaws potentially discovered through testing would be cleaned up and master data would be in place before the system actually went live. Management had anticipated it would take about six months to stabilize the new system, and that turned out to be accurate.

Sales forecasting in the meat-processing industry has unique challenges because of the many variables from dealing with perishable products, raw material by-products, and seasonality considerations. Every Thursday, Clemens Food had run a sales report on its old legacy system that showed the previous week's sales. Information about actual profitability was delayed. Now, the company can measure profitability on an invoice-by-invoice basis, and it knows the profitability of each order right away. Prices change daily in the perishable food business, so the importance of having real-time information about profitability can't be overstated.

Deeper insights and visibility from the new system have improved customer service. With available-to-promise processes running on SAP S/4HANA and with SAP S/4HANA integrated with the company's warehouse management system, Clemens Food can assure customers placing a phone order whether there is inventory available. In the pork industry, this can be an extremely complicated task, since a single hog can be broken down into hundreds of by-products. Before implementing SAP S/4HANA, Clemens Food was able to provide the same assurance only when an order was ready for shipment.

Once the new system is fully stabilized, Clemens Food plans a reporting upgrade, using SAP HANA Live views with its existing SAP BusinessObjects Business Intelligence suite. The company now has a single "source of truth," and data are integrated, whereas in the past it had to deal with similar data spread over multiple systems. With a single source of truth and the ability to put information at people's fingertips, Clemens Foods can create dashboards and focus on making reporting far simpler than it's ever been.

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CASE STUDY QUESTIONS

- 9-13** Why would supply chain management be so important for Clemens Food Group?
- 9-14** What problem was the company facing? What management, organization, and technology factors contributed to the problem?
- 9-15** Was SAP S/4HANA a good solution for Clemens Food Group? Explain your answer.
- 9-16** What management, organization, and technology issues had to be addressed to implement SAP S/4HANA at Clemens Food Group?

MyLab MIS

Go to the Assignments section of MyLab MIS to complete these writing exercises.

- 9-17** What are three reasons a company would want to implement an enterprise resource planning (ERP) system and two reasons it might not want to do so?
- 9-18** What are the sources of data for analytical CRM systems? Provide three examples of outputs from analytical CRM systems.

Chapter 9 References

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