CHAPTER 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

Lenzing Sustainably Balances Supply and Demand

CRM Helps Adidas Know Its Customers One Shoe Buyer at a Time

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Lenzing Sustainably Balances Supply and Demand

The Austria-based Lenzing Group supplies high-quality specialty fibers for the global fashion industry, sports and outdoor wear, and protection wear. Its botanic cellulose fibers, used in production of textile and nonwoven products, have much less damaging impact on the environment than traditional materials. The company has production sites in major global markets along with a worldwide network of sales and marketing offices, 6,500 employees, and 2019 revenue surpassing $2.3 billion. Lenzing's supply chain involves many different members, including spinners, weavers, mills, dye works and converters, as well as fashion brands and retailers.

According to Robert van de Kerkhof, Lenzing's chief commercial officer, the fashion industry is the second largest polluter worldwide. It production processes generate waste, and the end products themselves are generally non-biodegradable and rarely recycled. Lenzing adheres to very high environmental standards and has numerous international sustainability certifications for its business processes. It is considered the most sustainable company in its sector.

Lenzing wants to do more, and is focusing on innovations in both its products and processes to minimize its environmental impact while still meeting the needs of its end consumers. The company needed to create an end-to-end supply chain planning process that precisely matches supply and demand, minimizing inefficiencies while maximizing profitability. Lenzing had been using Excel spreadsheets, and manually intensive processes could not do the job, given the complexity of the company's worldwide business model and supply chain. More powerful software tools were required to digitally link demand forecasting, sales planning, and operations planning in order to create a highly accurate and efficient end-to-end supply chain.

Lenzing needed to overhaul its Sales & Operations Planning (S&OP) processes to fully integrate business planning processes and completely eliminate manual work. The sales and operations planning (S&OP) process enables companies to realize revenue, margin, and operating performance gains through improved decision support and cross-functional alignment. Lenzing selected JDA Sales & Operations Planning for this purpose.

JDA Sales & Operations Planning supports six distinct enterprise processes and associated scenario planning: demand review, supply review, demand-supply balancing, financial review, continuous plan refinement, and business performance management. Companies using this software are able to take a

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cross-functional approach to integrated business planning that unites all the moving parts across their supply chain to meet demand across markets, serving both immediate and long-term strategic goals. When risks, opportunities, or threats interfere with strategic execution, the entire organization can act swiftly and decisively to get back on track. The system provides visibility across departments and can identify performance gaps and provide what-if resolution. There is improved sales forecast accuracy, transparency, business alignment, and decision making.

Lenzing was able to quickly launch its JDA Sales & Operations Planning system using the JDA Cloud software as a service (SaaS). Returns on investment were immediate, with a 50 percent reduction in planning and decision-making time. The company had better visibility into its supply chain, leading to greater forecast accuracy and better decisions. Profitability and resource utilization improved, with better capabilities for allocating critical resources to the most profitable markets and product applications. The system helped Lenzing minimize waste, and its entire supply chain became leaner.

Sources: Bloomberg,"Greener Fashion Industry Could Unlock $100 Billion in Value," January 22, 2020; www.jda.com, accessed January 8, 2020; www.lenzing.com, accessed January 8, 2020; JDA Software, "World Leader in Specialty Fibers Made from Renewable Materials Creates a Digital Supply Chain Optimizing Profits and Sustainability," August 6, 2019.

Lenzing's problems with balancing supply and demand in a global marketplace illustrate the critical role of supply chain management systems in business. Lenzing's business performance was impeded because it could not accurately predict exactly the quantity of fiber materials other members of its supply chain needed in many different locations around the world. Lenzing's existing systems were highly manual and lacked the flexibility and power to do this. Lenzing's 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. This was not only added to costs, but was environmentalliy wasteful.

The chapter-opening diagram calls attention to important points raised by this case and this chapter. Lenzing's supply chain is far-reaching, servicing customers ordering fibers in many different locations around the globe. Lenzing's legacy systems were unable to coordinate demand, inventory, and supply planning across its entire global enterprise. The way it managed its supply chain was highly wasteful and ran counter to its corporate mission to promote sustainability. Implementing JDA software tools for Sales & Operations Planning has made it much easier for Lenzing's managers to access and analyze 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 have Lenzing's business model and objectives been affected by having an inefficient supply chain? How did JDA software tools improve operations and decision making at Lenzing?

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?

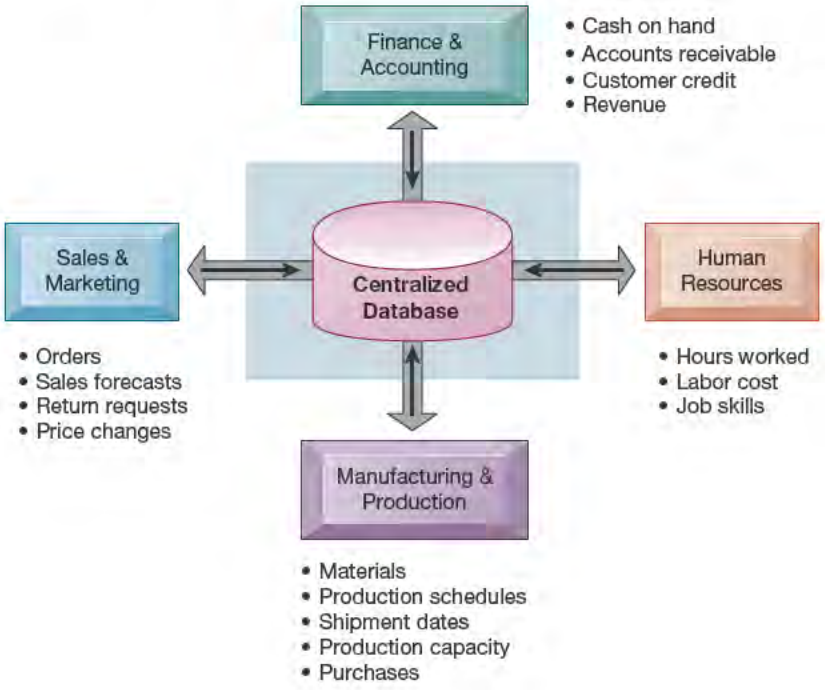
Imagine that you had to run a business based on information from tens or even hundreds of databases and systems, none of which could speak to one another. Imagine your company had 10 major product lines, each produced in separate factories, and each with separate and incompatible sets of systems controlling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

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

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.



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 business processes in the software. 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

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

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 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.

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.

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.

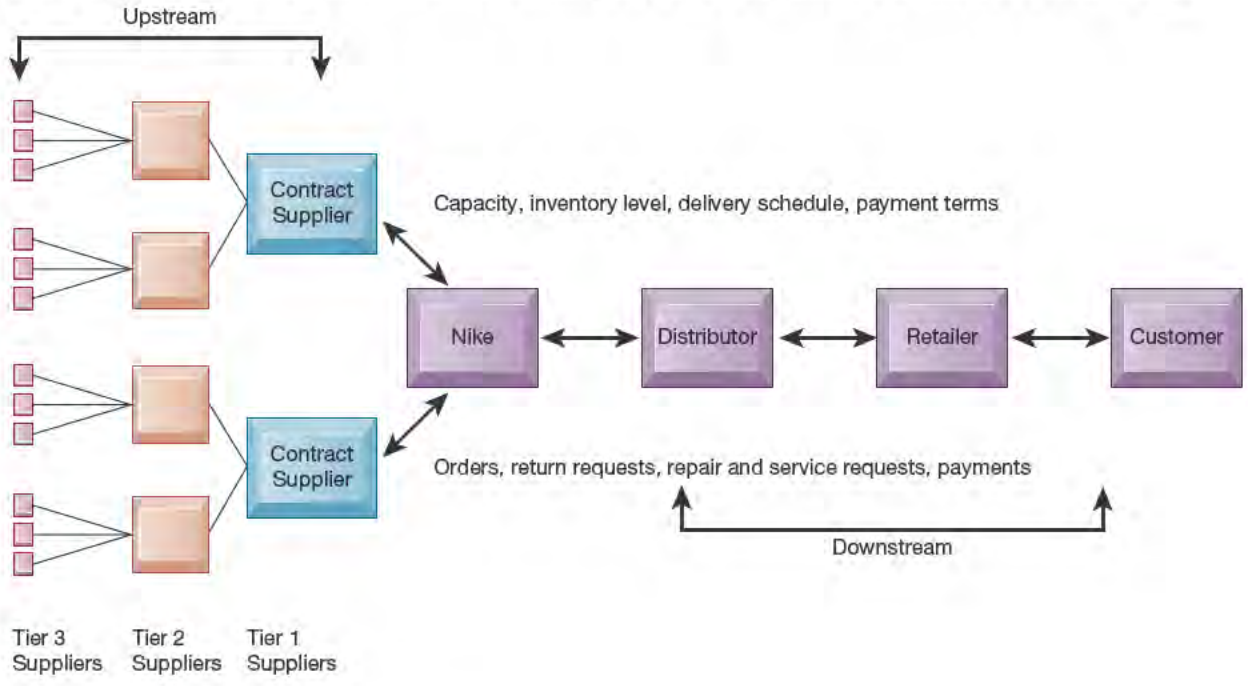
Let's look at the supply chain for Nike sneakers as an example. Nike designs, markets, and sells sneakers, socks, athletic clothing, and accessories throughout the world. Its primary suppliers are contract manufacturers with factories in China, Thailand, Indonesia, Brazil, and other countries. These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

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.

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.



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 also is 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.

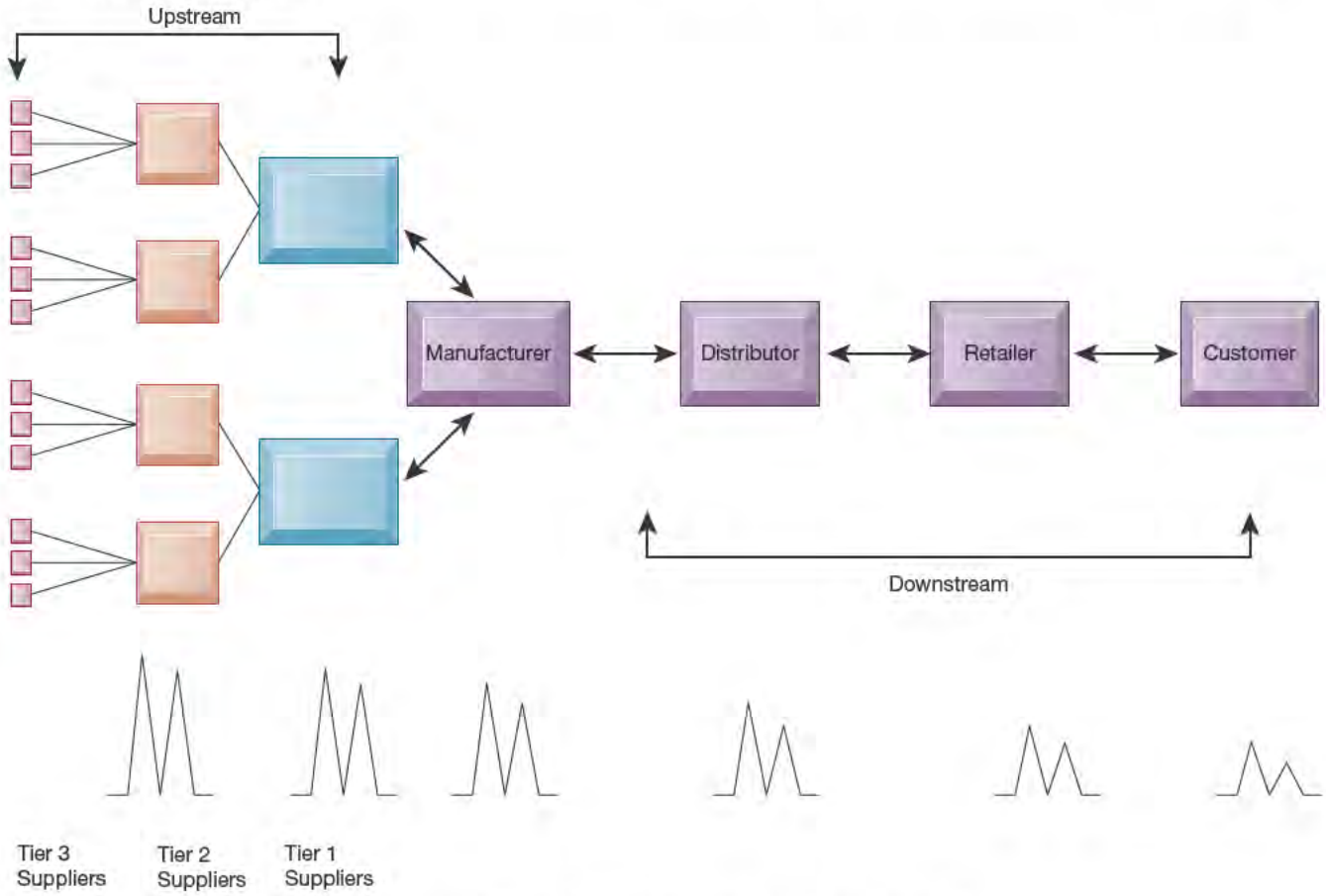
In a supply chain, however, uncertainties arise because many events cannot be foreseen—uncertain product demand, late shipments from suppliers, defective parts or raw materials, or production process breakdowns. To satisfy customers, manufacturers often deal with such uncertainties and unforeseen events 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), a global company with operations in over 80 countries, found it had excessively high inventories of its Pampers disposable diapers at various points along its supply chain because of such

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.



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.

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 (see the chapter-opening case study).

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 DHL, the global delivery service. 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.

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."

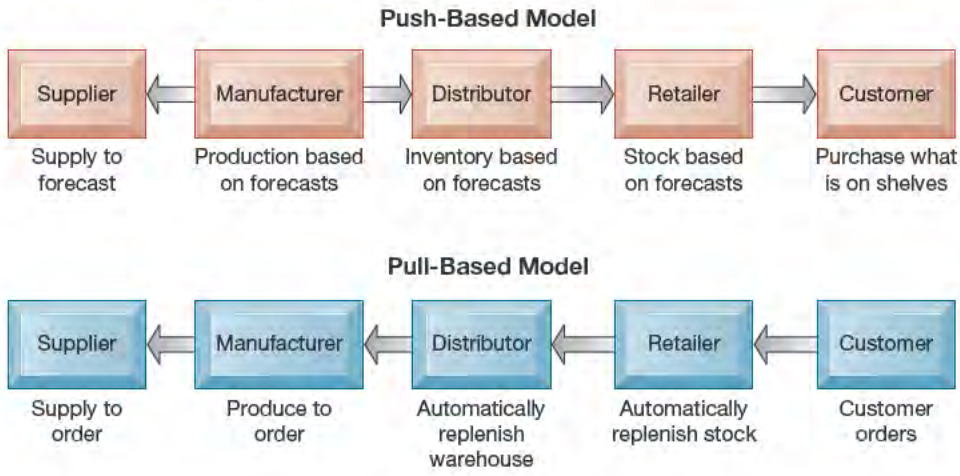
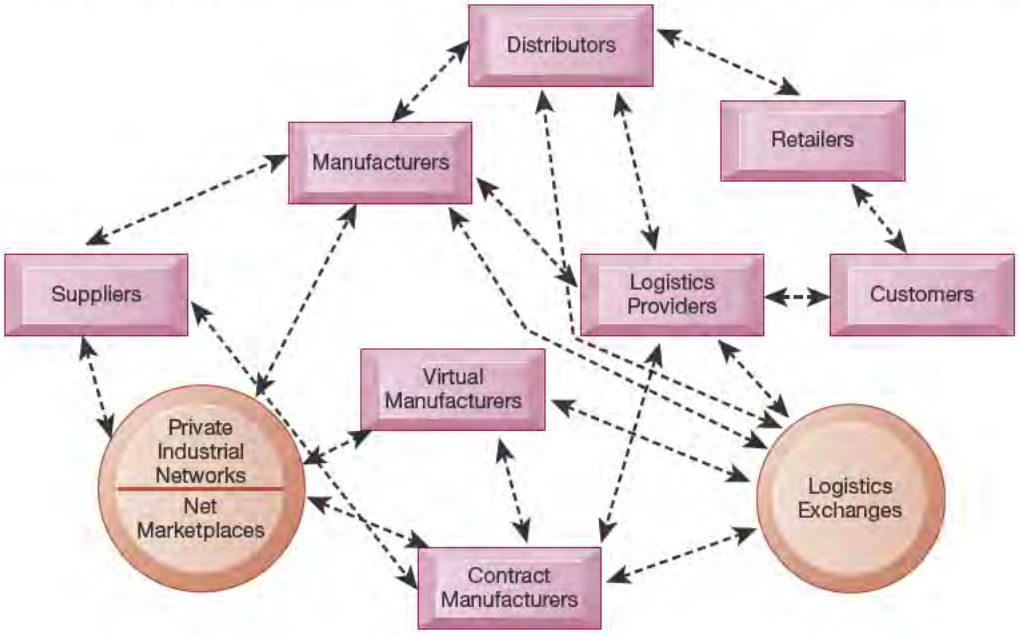


FIGURE 9.5 THE EMERGING INTERNET-DRIVEN SUPPLY CHAIN

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.



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).

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.

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.

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)**.

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. Customers are happier because they spend less time on the phone restating their problem to customer service representatives.

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

Marketing

CRM systems support direct-marketing campaigns by providing capabilities to capture prospect and customer data, provide product and service information, qualify leads for targeted marketing, and schedule and track 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 help firms manage and execute marketing campaigns at all stages, from planning to determining the rate of success for each campaign. For example, Kenya Airways uses Oracle Marketing Cloud to track the revenue generated from automated marketing campaigns and to identify data that would target the campaigns more effectively.

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

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.

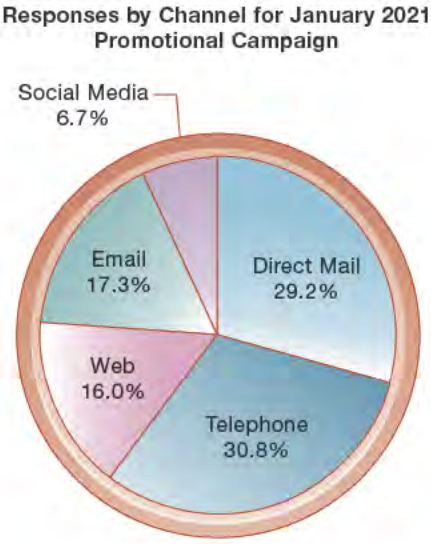


FIGURE 9.8 CRM SOFTWARE CAPABILITIES

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.

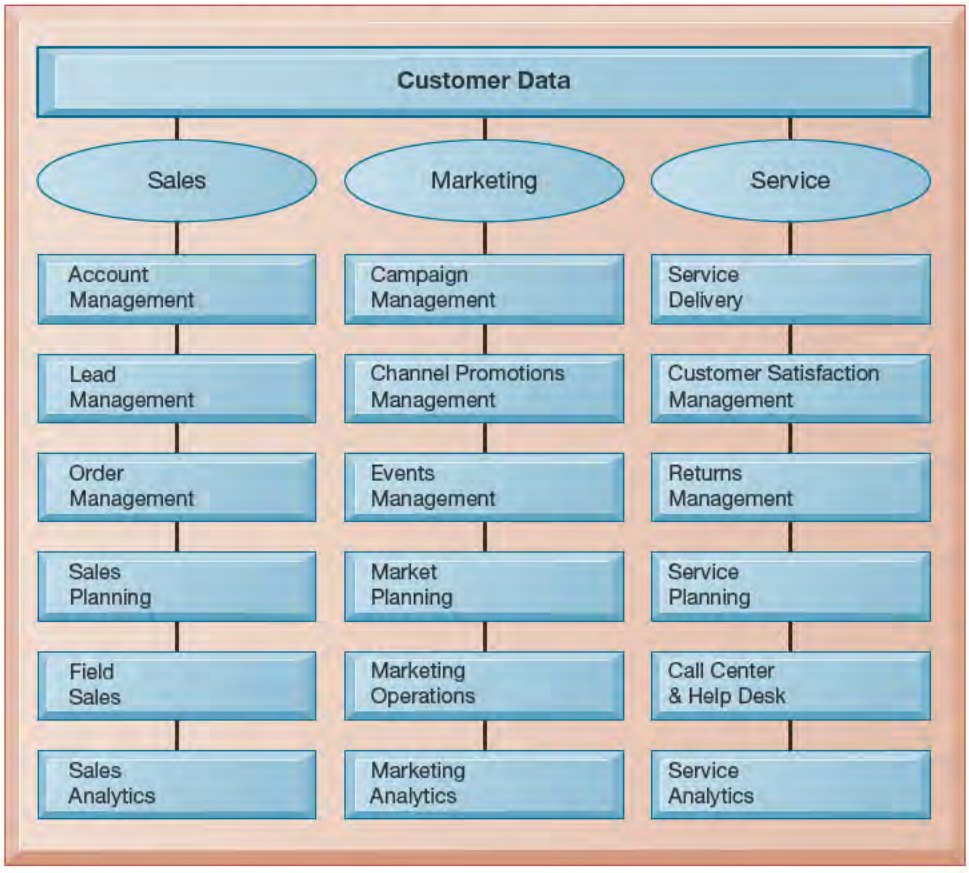
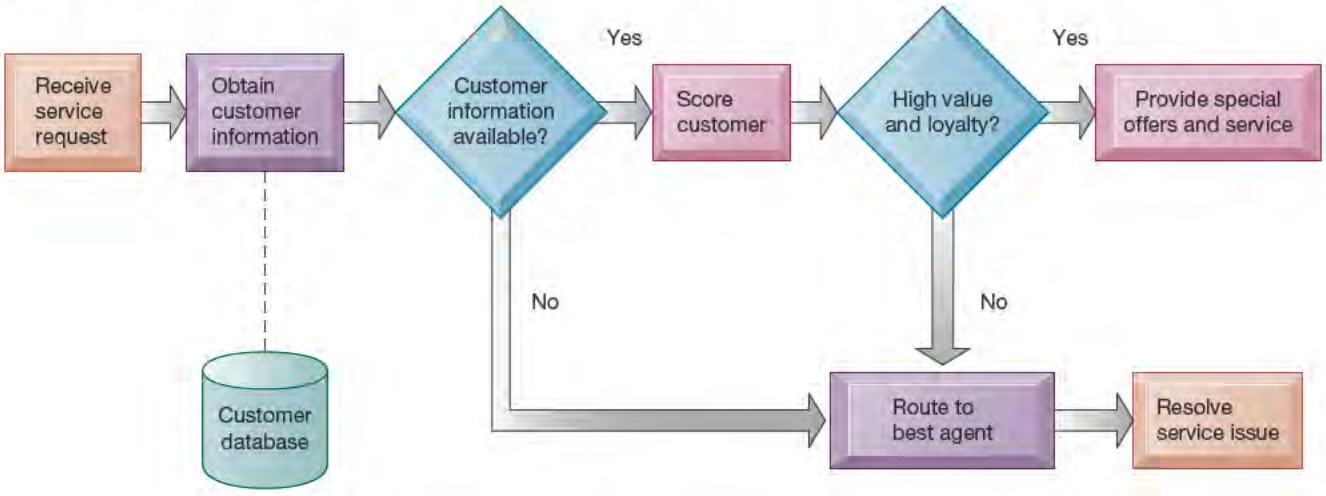


FIGURE 9.9 CUSTOMER LOYALTY MANAGEMENT PROCESS MAP

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.



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.

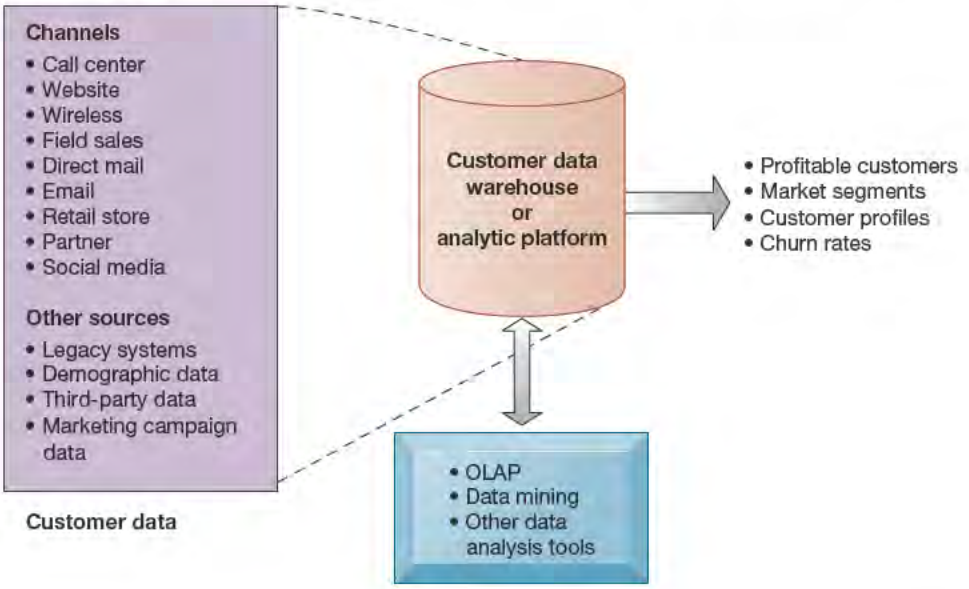
Operational and Analytical CRM

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

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.



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 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.

INTERACTIVE SESSION ORGANIZATIONS

CRM Helps Adidas Know Its Customers One Shoe Buyer at a Time

Adidas is a leading global maker of athletic shoes, clothing, and accessories, selling 1.2 million pairs of shoes each day. The company is headquartered in Herzogenaurach, Germany, has over 57,000 employees worldwide, and produced net sales of 23.6 billion Euros (U.S. $27 billion) in 2019. It is the second largest sportswear manufacturer in the world after Nike.

Adidas is also a leader in digital and online marketing. The company's most important store is no longer a physical store—it's a website. The Adidas website is a key channel for offering connected and personalized customer experiences that help differentiate Adidas from competitors and lead to increased sales. E-commerce is Adidas's most profitable point-of-sale channel, with online sales reaching 5.509 billion Euros (U.S. $6.180 billion) in 2019.

Adidas does not compete on price but on the quality of its brand and the customer experience. The transition from brick-and-mortar to digital as the preferred shopping medium has shaped the way the company keeps up with changing customer preferences. Customers are clearly at the center of Adidas's business, and their experience with other online retailers such as Amazon has made them want a relationship with Adidas that is more personal.

To serve customers better and manage all of its relationships with them, Adidas turned to Salesforce.com, which features cloud-based tools for customer relationship management (CRM) and application development. Salesforce.com helps Adidas identify key customer segments, develop closer ties to customers, and design differentiated experiences tailored to each customer's needs. Salesforce CRM tools make it possible for Adidas to have a single view of each customer across all the various channels through which that person interacts with the company.

Salesforce Marketing Cloud is a CRM platform that allows marketers to create and manage marketing relationships and campaigns with customers. The Marketing Cloud incorporates integrated solutions for customer journey management, email, mobile, social media, web personalization, advertising, content creation, content management, and data analysis. Every imaginable customer interaction and engagement is covered. The software includes predictive analytics to help make decisions such as, for example, what channel would be preferable for a given message. A component called Journey Builder helps marketers tailor campaigns to customers' behavior and needs, demographics, and communication channel preferences.

The Marketing Cloud is connected to Salesforce.com's Sales Cloud and Service Cloud to provide a unified experience and prevent customers from being contacted separately by representatives from sales, marketing, and service groups. Service Cloud is a platform for customer service and support. Companies using Service Cloud can automate service processes, streamline workflows, and locate key articles, topics, and experts with information to help the company's 1,100 customer service agents. Service Cloud can "listen" and respond to customers across a variety of social platforms and automatically route cases to the appropriate agent. Service for Apps makes it possible to embed customer support software into mobile applications, including features for live agent video chat, screen sharing, and on-screen guided assistance. Service Cloud makes it possible to deliver service that is more personalized and convenient in whatever form each customer prefers—email, web, social media, or telephone—all from a single application.

Adidas is able to deploy its centralized e-commerce site globally by using the Salesforce Commerce Cloud. Commerce Cloud supports every language and currency required for the company's business throughout the globe. Adidas uses the knowledge of individual customers and their preferences obtained through Commerce Cloud to create better products, which can be manufactured and delivered to the customer very rapidly. Adidas is also using the Salesforce DMP data management platform to capture online and web behavior from digital actions across all channels and devices.

To move even closer to the customer, Adidas developed a mobile app that customizes content, interactions, and products based on the customer's personal preferences and behavior that have been identified via various digital points of engagement. The app features customized product recommendations, color preference and location, order tracking, blog posts, personalized articles, videos, real-time updates concerning an individual's sport and sports star preferences, and an intelligent online chat tool called Einstein to help answer customer questions and make more customized product recommendations. The app works with Apple Pay and Android Pay mobile payment systems.

Jacqueline Smith-Dubendorfer, Adidas Vice President of Digital Experience Design, believes that using Salesforce for customer relationship management has enhanced the company's ability to treat each customer as an individual. Who is this person? How much do we know about that individual? Where did that person come from? What is that person interested in? With Salesforce CRM tools, Adidas can now answer these questions much more easily. CRM provides the information for Adidas to adapt what it presents to the customer to deliver as close as it can to what the customer is actually looking for. Adidas can now connect one-to-one with every customer, across multiple channels and on any device.

Sources: "Adidas," www.salesforce.com, accessed February 11, 2020; www.adidas-group.com, accessed February 10, 2020; "Roundup: E-Commerce Sales Increase for Adidas," digitalcommerce360, August 9, 2019; Stuart Lauchlan, "Dreamforce 2018; Adidas Gets Closer to Customers by Adopting an Athletic Mindset in Business. Diginomica, September 27, 2018; and Nadia Cameron, "Adidas Taps Data and Technology Smarts to Build Personalized Digital Engagement with Customers," CMO, November 7, 2017.

CASE STUDY QUESTIONS

1. Analyze Adidas using the competitive forces and value chain model.
2. What is Adidas's business strategy? What is the role of customer relationship management in that strategy?
3. How do information systems support Adidas's strategy?
4. How did using Salesforce.com make Adidas more competitive? How did it change the way the company ran its business?
5. Give an example of two business decisions that were improved by using Salesforce.com.

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 expensive to purchase and implement. According to a 2020 survey of 181 ERP users conducted by Panorama Consulting Group, 38 percent of ERP projects experienced cost overruns, and these overruns averaged 66 percent over budget. (Panorama Consulting Group, 2020). 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, 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. U.S. discount retailer 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.

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 global $2 billion metal-cutting tools company, 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, which sells to customers in 60 countries, avoided customization when it moved from in-house systems to the Oracle ERP Cloud. The retailer used 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. (See the Learning Track on Wireless Applications for Customer Relationship Management, Supply Chain Management, and Healthcare.) Large enterprise software vendors such as SAP, Oracle, and Microsoft now feature cloud versions of their flagship ERP systems and also cloud-based products for small and medium-sized businesses. 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 Interactive Session on Technology describes how Versum Materials was able to transform its business using a new cloud-based ERP system.

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 FT Global 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 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). HANA in-memory computing technology enables SAP's enterprise applications