

Integrated Business Processes with ERP Systems

CHAPTER 1

Introduction to Business Processes

LEARNING OBJECTIVES

After completing this chapter you will be able to:

1. Define the functional organizational structure, and explain why this structure creates problems for modern businesses.
2. Describe key business processes in an organization.
3. Identify the main integration points between and among processes.
4. Understand the cross-functional nature of processes and their relationship to organizational areas.
5. Adopt and apply an integrated perspective to business processes.
6. Describe organizational structure of Global Bike Incorporated.
7. Explain how the SAP[®] ERP system promotes an integrated approach to business processes.

At this point in your university career, you have probably begun taking courses in accounting, operations, MIS, and other disciplines. These courses have introduced you to some basic business concepts and exposed you to different aspects of how a business operates. You have also begun to master several technology tools that will be very useful in your future career, such as office productivity tools to create spreadsheets, presentations, and documents. The course for which you are using this textbook deals with *integrated business processes* and the *enterprise systems* (ES) that support them. The concepts and skills you will gain from this course are different from what you have experienced previously, and you will need to approach this course with a different perspective.

THE FUNCTIONAL ORGANIZATIONAL STRUCTURE

To successfully master the concepts in this textbook, you must first begin to think holistically about the operations of a business. The most common organizational structure you are likely to encounter is the **functional structure**. Organizations that utilize a functional structure are divided into functions, or departments, each of which is responsible for a set of closely related activities. For example, the accounting department sends and receives payments, and the

warehouse receives and ships materials. Typical functions or departments found in a modern organization include *purchasing, operations, warehouse, sales and marketing, research and development, finance and accounting, human resources, and information systems*. The vertical columns in [Figure 1-1](#) identify the key functions in a typical company.

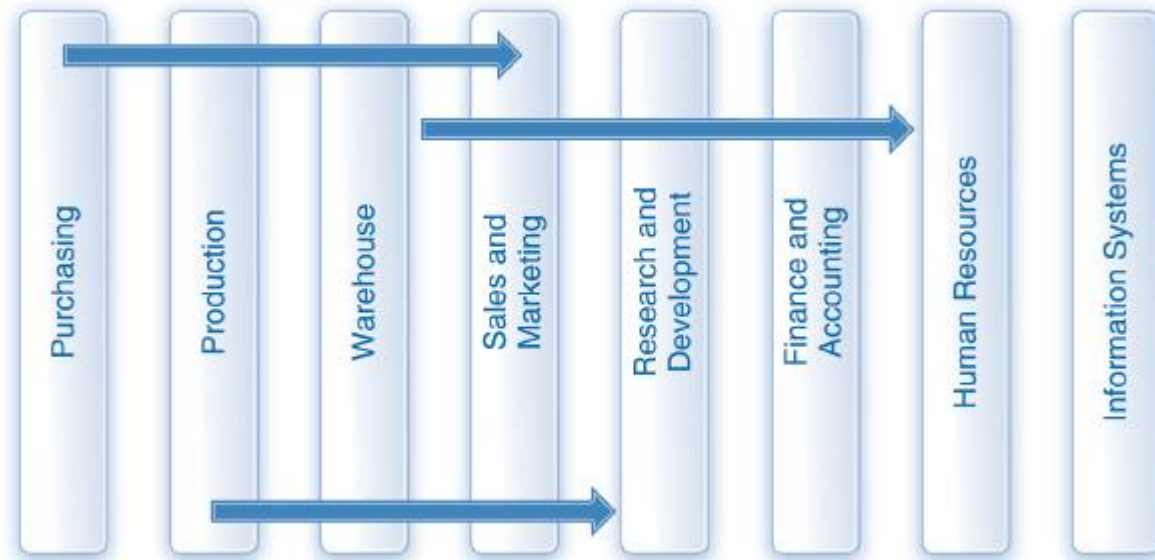


Figure 1-1: The functional structure

Although most companies maintain vertical (or functional) silos to compartmentalize their operational units, the integrated business processes that companies use to perform their work cut across these silos horizontally. Business processes, such as the procurement and fulfillment processes discussed later in the chapter, consist of activities that occur in different, seemingly unrelated functions or departments. In other words, these processes are *cross-functional*, meaning no single group or function is responsible for their execution. Rather, it is a shared responsibility among many functional areas. The cross-functional nature of business processes is also illustrated in [Figure 1-1](#). For a process to be successfully completed, then, the company must rely on each functional group to execute its individual steps in the process in a coordinated way, which, as we shall see, may not be an easy thing to accomplish.

THE SILO EFFECT

The functional structure served organizations well for a number of years because it enabled them to cope with the challenges generated by their rapid growth. Over time, however, this system developed a serious drawback. Put simply, people in the different functional areas came to perform their steps in the process in isolation, without fully understanding which steps happen before and which steps happen next. They essentially complete their part of the process, hand it off to the next person, and then proceed to the next task. By focusing so narrowly on their specific tasks, they lose sight of the “big picture” of the larger process, be it procurement, fulfillment, or any number of other common business processes. This tendency is commonly

referred to as the **silo effect** because workers complete their tasks in their functional “silos” without regard to the consequences for the other components in the process.

A key point here is that the silo nature of the functional organizational structure and the cross-functional nature of processes are at odds with each other. That is, while workers focus on their specific function, each business process involves workers located in multiple functional areas. A major challenge facing organizations, then, is to coordinate activities among the different functional areas. Viewing a company from a process perspective requires employees to “think sideways”—in other words, to view the business across functional boundaries and focus on the end-to-end nature of the process and its intended outcomes. Learning to view a process from end to end is essential to understanding how enterprise systems help businesses manage their processes efficiently. Not surprisingly, then, this understanding has become a critical skill that companies have come to demand from their employees.

ENTERPRISE SYSTEMS

As you can see from the previous section, business processes span different parts of an organization. In fact, in today's global economy, the various process steps are increasingly executed by people in multiple locations throughout the world. That is, a company will manufacture its products in different countries, acquire the materials to make these products from different locations, sell the products in many countries, and so on. For example, a bicycle manufacturer may purchase components from Italy, produce bicycles in Germany, and sell those bicycles in the United States. Because the steps in business processes are performed in locations that are geographically dispersed, it is impossible to manage such processes effectively without the use of modern information systems. Systems that support end-to-end processes are called **enterprise systems (ES)**, and they are essential to the efficient and effective execution and management of business process.

Given the significant impact that enterprise systems have on operational efficiency (and, ultimately, profitability), companies have invested enormous sums of capital and effort to plan, implement, and continuously improve enterprise systems over the past 40-plus years. A great deal of research has confirmed that investments in information technology (IT), particularly enterprise systems, have significantly increased the profitability, productivity, and competitiveness of corporations by removing the barriers to sharing information between functional areas and managing processes holistically.^{1,2} The key driver for this productivity and efficiency is the ability of modern enterprise systems to effectively manage a business process from beginning to end in an integrated, consistent, and highly efficient manner. Further, once a business process is managed by an integrated enterprise system, it can be monitored and improved very easily. As a result, we cannot discuss contemporary business processes without considering the role of enterprise systems. We will discuss enterprise systems in greater depth in

In this chapter, we begin by identifying the key processes that typically exist in organizations. We then discuss enterprise systems and SAP, the company that produces the most popular enterprise systems globally. We also introduce Global Bike Incorporated, a company that we will use as a case study throughout this textbook to illustrate important concepts in a practical format. We conclude with the plan for the remainder of the book.

BUSINESS PROCESSES

Organizations exist either to serve some commercial purpose or to achieve some social objective. They differ depending on the purpose or goal they are trying to achieve, their ownership or management structure, and the regulatory environment in which they operate. Some organizations create and deliver products or services to customers to make a profit. For example, a bicycle manufacturer produces a variety of bicycles and accessories. It then sells these products to numerous retailers who, in turn, sell them to the final consumers. Other companies provide services, such as repairs to the bicycles. Yet others provide the manufacturer with the parts and materials needed to make the bicycles. Achieving the organization's objectives involves many different types of work. For example, the manufacturer must design the bicycles, identify what parts it will use to make them, determine where to obtain these parts, produce the bicycles, identify its customers, and market and sell the bicycles to them. In addition, it must determine how to manage its money, its various facilities such as factories and warehouses, and the many people that it must recruit, employ, train, and retain. This work is completed in numerous processes.

Although organizations exist for many different purposes, vary greatly in size and complexity, and operate in many different industries, they all exhibit similarities in the ways that they operate. Regardless of their type or size, successful organizations and industries use *processes* and *enterprise systems* to complete the work needed to achieve their goals. Processes may vary slightly depending on the unique characteristics of the industry or the structure of the organization, but the basic activities can be recognized by anyone who has developed a process view of business. Likewise, companies may employ different enterprise systems to manage their processes. However, you can apply the principles, concepts, and techniques explained in this textbook to most of the enterprise systems you are likely to work with.

A **business process**, illustrated in [Figure 1-2](#), is a set of tasks or activities that produce desired outcomes. Every process is triggered by some event, such as receiving a customer order or recognizing the need to increase inventory. The columns in the figure represent different parts, or functional areas, within an organization, such as sales, warehouse, manufacturing, and accounting. Thus, the specific steps in the process are completed in different functional areas. For example, when a retailer (customer) places an order for bicycles, the manufacturer (seller) uses a specific process to ensure that the correct products are shipped to the customer in a timely manner and that payment for the order is received. These process steps can include validating the order, preparing the shipment, sending the shipment, issuing an invoice, and recording the receipt of payment. The sales department receives and validates the customer order and passes it on to the warehouse, which prepares and ships the order. The accounting department handles the invoice and payment steps. This is a very simplistic example. However, it highlights the fact that processes consist of interdependent steps that are completed in different parts of the organization.

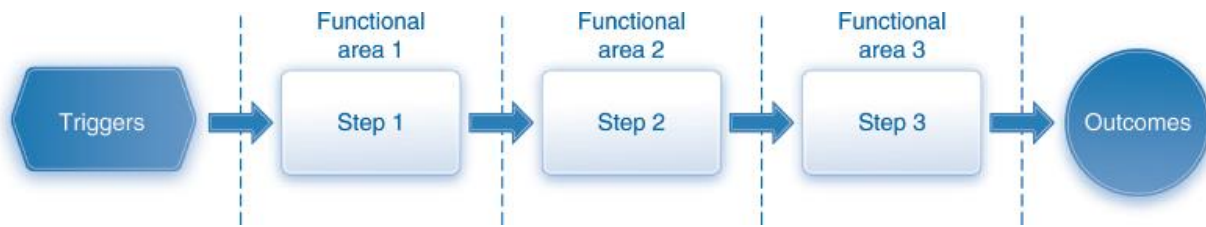


Figure 1-2: A generic business process

Because the various process steps are carried out by different functional areas or departments, effective communication and collaboration among the departments is essential to the smooth execution of these processes. Without this interaction, the process cannot be completed efficiently and effectively. For instance, if the customer order is not properly communicated to the warehouse, then it cannot be shipped on time. Similarly, if the order and shipment information is not communicated to the accounting department, billing and payment will not be completed efficiently and accurately. Clearly, completing a process successfully requires more than just communicating information. Close coordination of work among the people involved is also essential. For example, when the salesperson accepts the order, he or she must collaborate with the warehouse to determine when the order can be shipped. Without this collaboration, the salesperson may make promises that the company cannot realistically meet. If this occurs, then, the products will not be available when promised. The salesperson must also collaborate with the accounting department to verify that the customer is credit-worthy. Accepting orders and shipping goods to customers who have not made payments for previous shipments can cause major financial problems for the organization.

An organization uses many processes to achieve its objectives, as illustrated in [Figure 1-3](#). Three processes are directly related to creating and delivering products and services. They are *buy*, *make*, and *sell*. Organizations use specific terms to identify these processes.

- The **procurement process** (*buy*) refers to all of the activities involved in buying or acquiring the materials used by the organization, such as raw materials needed to make products.
- The **production process** (*make*) involves the actual creation of the products within the organization. Whereas the production process is concerned with acquiring needed materials *internally* (by making them), the procurement process is concerned with obtaining needed materials *externally* (by buying them). Each is appropriate for different types of materials, as we will discuss later in the book.

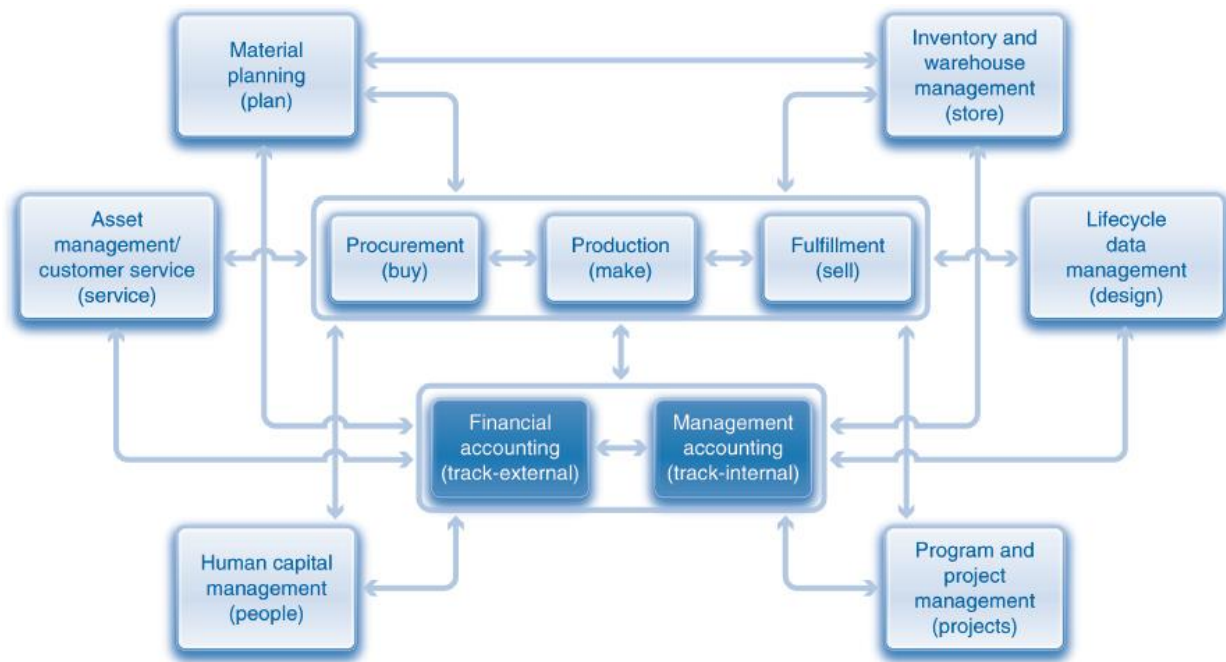


Figure 1-3: Key business processes

- Finally, the **fulfillment process** (*sell*) consists of all the steps involved in selling and delivering the products to the organization's customers.

Closely related to buying, making, and selling are four processes used to *design*, *plan*, *store*, and *service* products. Once again, organizations use specific terms for these processes.

- The **lifecycle data management process** (*design*) supports the design and development of products from the initial product idea stage through the discontinuation of the product.
- The **material planning process** (*plan*) uses historical data and sales forecasts to plan which materials will be procured and produced and in what quantities.
- The **inventory and warehouse management (IWM) process** (*store*) is used to store and track the materials.
- The **asset management and customer service processes** (*service*) are used to maintain internal assets such as machinery and to deliver after-sales customer service such as repairs.

Going further, two support processes are related to *people* and *projects*.

- **Human capital management (HCM) processes** (*people*) focus on the people within the organization and include functions such as recruiting, hiring, training, and benefits management.
- **Project management processes** (*projects*) are used to plan and execute large projects such as the construction of a new factory or the production of complex products such as airplanes.

All these processes have an impact on an organization's *finance*. This brings us to the last two processes, which *track* the financial impacts of processes.

- **Financial accounting (FI) processes** (*track–external*) track the financial impacts of process steps with the goal of meeting legal reporting requirements—for example, the Internal Revenue Service (IRS) or the Securities and Exchange Commission (SEC).
- **Management accounting or controlling (CO) processes** (*track–internal*) focus on internal reporting to manage costs and revenues.

Each of these processes can include numerous subprocesses. For example, each of the components of HCM, such as recruiting and benefits management, is itself a process. Similarly, IWM can include complex processes for receiving materials from a vendor and shipping products to a customer. In addition, each process can impact other processes, as illustrated by the arrows between the processes in [Figure 1-3](#). These arrows represent process integration. For example, the procurement of raw materials has an impact on what can be produced and when. Similarly, the production process has an impact on what goods are available to sell and when. Going further, the arrows indicate that all processes have an impact on the organization's financials, a concept we explore throughout this book.

Clearly, then, in addition to understanding the details of how each process works, it is essential to understand the interrelationships among the processes. Significantly, to prevent [Figure 1-3](#) from becoming cluttered with arrows, we did not include every possible integration point. Instead, we highlighted only the key points.

In the next section, we briefly describe the various business processes. We subsequently consider each process at length in separate chapters, where we also examine the linkages among the processes.

PROCUREMENT—BUY

The procurement process includes all of the tasks involved in *acquiring needed materials externally* from a vendor. A very simple example of a procurement process is diagrammed in [Figure 1-4](#). As the figure illustrates, procurement is comprised of five steps that are completed in three different functional areas of the organization.

The process begins when the warehouse recognizes the need to procure materials, perhaps due to low levels of inventory. The warehouse then documents this need in the form of a purchase requisition, which it sends to the purchasing department. In turn, the purchasing department identifies a suitable vendor, creates a purchase order, and sends it to the vendor. The vendor ships the materials, which are received in the warehouse. The vendor then sends an invoice, which is received by the accounting department. Accounting then sends payment to the vendor, thereby completing the process.



Figure 1-4: A procurement process

In the preceding discussion a low inventory of materials was the trigger for the process. This discussion illustrates the link between procurement and the inventory and warehouse management process illustrated in [Figure 1-3](#). [Figure 1-3](#) shows, however, that procurement could be triggered by activity in other processes as well. The figure suggests at least three alternative scenarios.

1. The material planning process could indicate that the company needs to procure materials based on a forecasted demand for products.
2. The asset management or customer service process could trigger the procurement of a part needed to repair a machine or a product previously purchased by a customer.
3. A customer order (fulfillment process) could trigger the need to buy something, such as raw materials or component parts needed to manufacture the product.

PRODUCTION—MAKE

In the preceding discussion the company met the need that triggered the process via external procurement; that is, it purchased the needed materials from a vendor. Other times, however, a company uses the production process to *acquire needed materials internally*. As we explained in the previous paragraph, a customer order can trigger the production process. Alternatively, the material planning process can trigger in-house production. [Figure 1-5](#) illustrates the case where the warehouse notices that its inventory of products is low. Subsequently, it will request production. In turn, the production department will approve the request. The approval authorizes the warehouse to release the materials needed to complete production. Once the production department has completed its task, the warehouse places the finished goods into storage. Note that this last step in the production process, which is concerned with the storage of the finished goods, could trigger IWM processes.

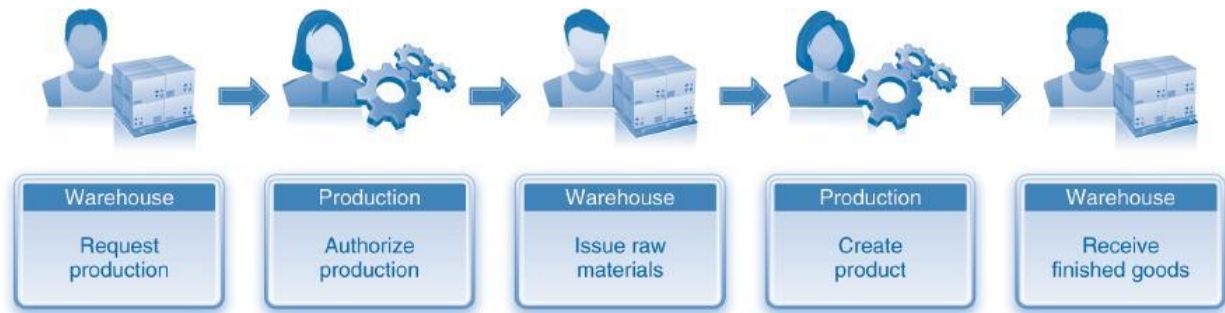


Figure 1-5: A production process

FULFILLMENT—SELL

Fulfillment ([Figure 1-6](#)) is concerned with *efficiently processing customer orders*. It is triggered by a customer purchase order that is received by the sales department. Sales then validates the order and creates a sales order. The sales order communicates data related to the order to other parts of the organization, and it tracks the progress of the order. The warehouse prepares and sends the shipment to the customer. Once accounting is notified of the shipment, it creates an invoice and sends it to the customer. The customer then makes a payment, which accounting records.

As this scenario illustrates, fulfillment triggers processes in IWM where the materials are stored. Of course, in many cases the ordered materials are not available in the warehouse. In such cases fulfillment will trigger external procurement and/or production.



Figure 1-6: A fulfillment process

MATERIAL PLANNING—PLAN

The term **material** encompasses all the products, components, parts, and so on that an organization uses. Businesses use and produce many types of materials. For example, material planning in a bicycle manufacturer would include: (a) *finished goods*, such as bicycles, that are sold to customers; (b) *semifinished goods*, such as wheel assemblies, that are used to make the finished goods; and (c) *raw materials*, such as the tires, tubes, and wheels that are used to make the wheel assemblies. We examine the major *material types* in greater detail in [Chapter 2](#).

The purpose of material planning is to *match the supply of materials with the demand*. The demand for finished goods is based on external factors such as customer tastes and preferences, economic conditions, and competitors' actions. The demand for the other materials is dependent on the demand for finished goods. Consequently, organizations use different data and processes to plan for different types of materials.

The supply of materials is a function of many internal and external factors. For example, the supply of materials procured externally (e.g., raw materials) depends on availability from vendors as well as the *lead time*, which is the time between placing the order and receiving the shipment. Internally, the supply depends on available production capacity in the factories.

The outcome of material planning is the development of strategic and operational plans that match supply with demand as closely as possible. Excess supply will result in increased inventory costs, which are the expenses associated with storing materials. Insufficient supply will result in a situation called *stock-out* in which the company cannot meet its customers' demands. Both situations can undermine a company's productivity and profits.

Material planning is influenced by the fulfillment process, which provides sales data that companies use to forecast demand for finished goods. It is also influenced by procurement and production, which provide data on lead times and capacities, and by IWM, which provides data on material availability. In turn, material planning will trigger procurement and production processes to ensure that demand is met and IWM processes to ensure that materials are stored until needed.

INVENTORY AND WAREHOUSE MANAGEMENT—STORE

Inventory and warehouse management (IWM) is concerned with the *storage and movement* of materials. For a business to operate efficiently, it is essential that materials be stored so that they can be quickly and easily located when needed. This is especially true for large warehouses where thousands of different materials are stored in large quantities. In addition, companies must be able to move the materials quickly and efficiently to wherever they are needed.

[Figure 1-7](#) depicts four scenarios related to material storage and movement. Quadrant A (top left) shows a request for materials that will be used in the production process. These materials must be located and then issued to the production floor. In Quadrant B, the warehouse receives materials from the production process and then prepares them for storage. This process can include such steps as sorting and determining an appropriate storage location. Finally, the materials are moved into the selected locations. A similar process is used for materials that are received from a vendor via the procurement process (Quadrant C). Finally, when a customer order is processed by the fulfillment process, the warehouse must locate the materials and prepare and send shipments to the customer (Quadrant D).

These examples also clearly illustrate the integration between IWM and procurement, production, and fulfillment. We will discuss integration points with other processes in later chapters.

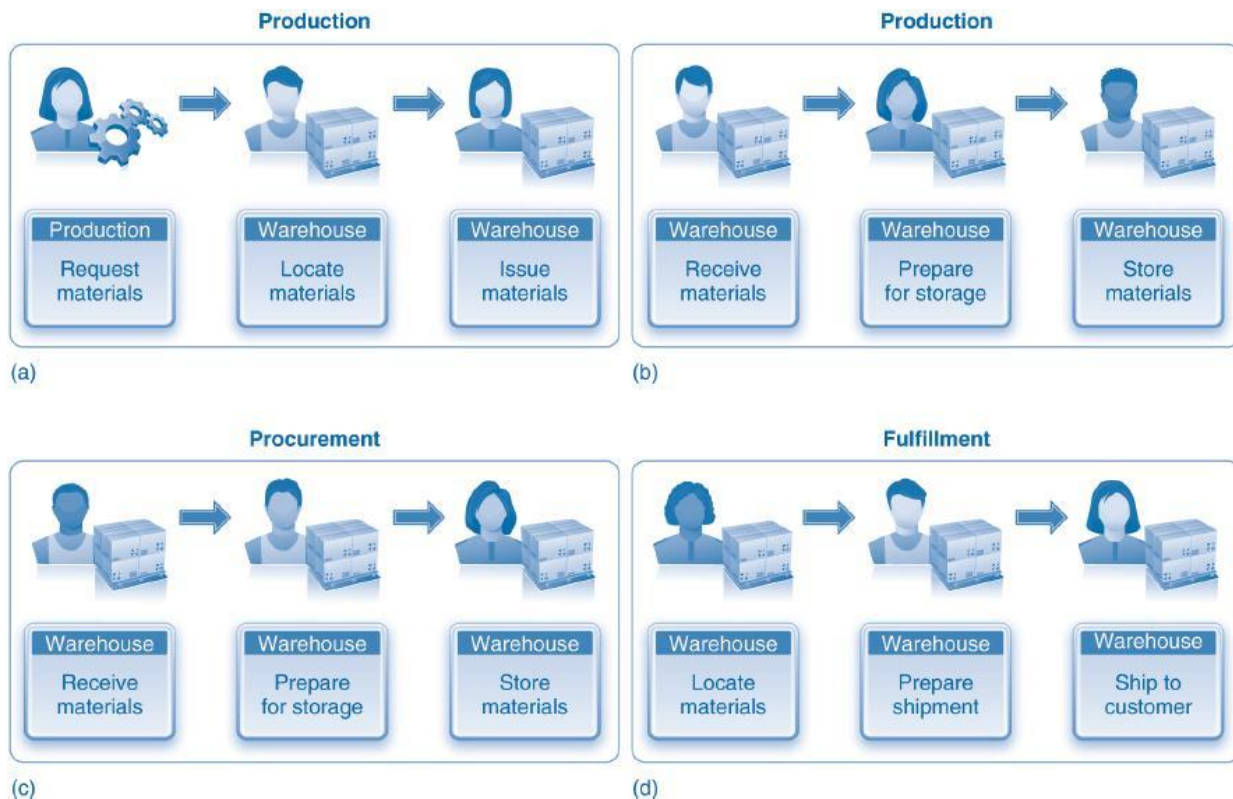


Figure 1-7: Inventory and warehouse management processes

LIFECYCLE DATA MANAGEMENT—DESIGN

A successful organization must constantly improve its products and create new and innovative products that reflect changes in customer tastes and preferences. Lifecycle data management provides a set of tools to *manage product design and improvement* throughout the lifecycle of a product. The product lifecycle begins with idea or concept development; progresses through production, marketing, and service; and concludes when the product is discontinued from the market. It can range from a few months for fad items to many years or even decades for products such as automobiles and bicycles. Products in the latter category typically undergo small but continual improvements over the course of their lifecycle.

Lifecycle data management enables an organization to optimize its product development process, from design to market, while ensuring that it complies with industry, quality, and regulatory standards. At the same time, it provides users—that is, the organization's employees—with access to product data at any point in the product's lifecycle. This capability, in turn, enables the organization to react more quickly to take advantage of market and competitive opportunities.

ASSET MANAGEMENT AND CUSTOMER SERVICE—SERVICE

Asset management is concerned with both the preventive and corrective maintenance of an organization's equipment. *Preventive maintenance* is performed periodically—for example, the routine maintenance of a machine in a factory. In contrast, *corrective maintenance* is done as

needed—for example, repairing a machine when it breaks down. [Figure 1-8](#) illustrates a simplified maintenance process. The trigger is a maintenance request, which can be either preventive or corrective. Production approves the request, and the maintenance is performed. The final stage, settlement, involves an internal charge for the work done.

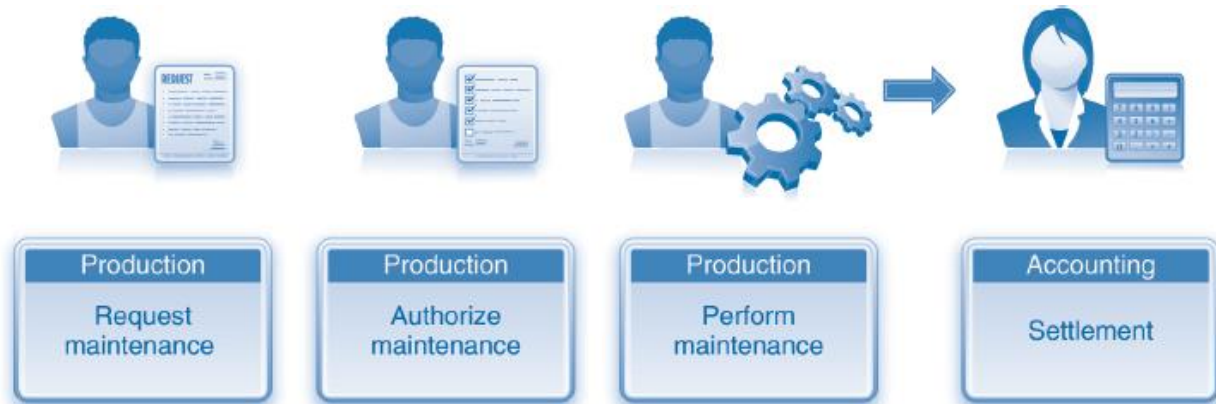


Figure 1-8: An asset management process

A similar process is used for service requests from customers, for example, to *repair a product* they purchased ([Figure 1-9](#)). In such cases, different functional areas may be involved. Sales receives a service request, which it approves and forwards to the department responsible for completing the repairs. Settlement will depend on whether the service is covered by a warranty. If it is, then the organization will absorb the cost of the repair. Otherwise, the organization will send an invoice to the customer and then record payment, similar to the steps in the fulfillment process.

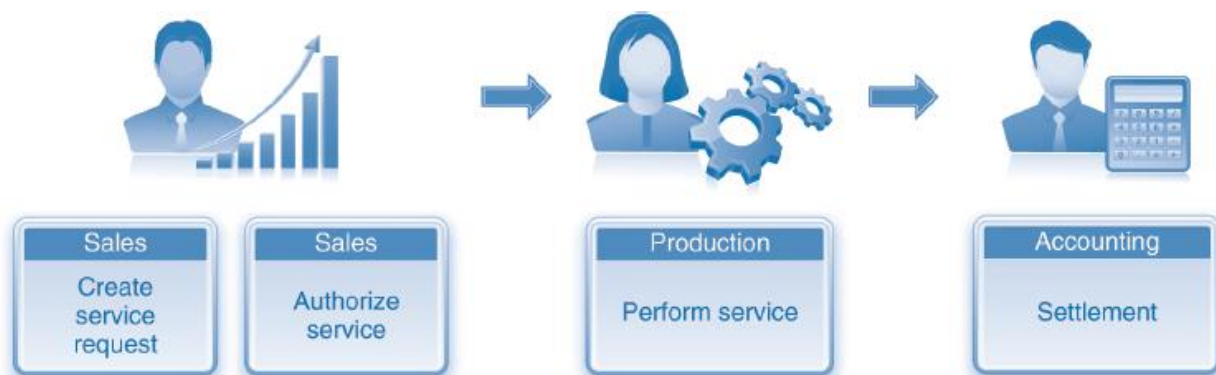


Figure 1-9: A customer service process

HUMAN CAPITAL MANAGEMENT—PEOPLE

Human capital management (HCM) consists of numerous processes related to all aspects of *managing people* in an organization. Examples of HCM processes are *recruitment, hiring, training, compensation and benefits management, and payroll administration*. In our brief

discussion of processes in this chapter, we focused on tasks and the functional areas where they are completed. Clearly, however, it is the people in the functional areas who actually perform the tasks. Consequently, HCM touches every process in the organization. Moreover, it is not uncommon for people in different functional areas to complete many of the tasks in HCM processes. For example, the trigger for recruitment and hiring is a need for people with the requisite skills to complete process tasks. Consequently, the functional area in need of new employees will be involved in this process.

PROJECT MANAGEMENT—PROJECTS

Most business processes are ongoing or repetitive. For example, the lifecycle data management process spans the life of a product, and the procurement and fulfillment processes are repeated frequently. In contrast, a **project** is temporary in nature and is typically associated with large, complex activities, such as the construction of a factory or an aircraft. As we discussed earlier, project management refers to the processes a company uses to *plan and execute large-scale projects*. It involves the use of tools and techniques for managing complex projects.

Projects can be internal or external depending on the recipient of the final outcome. For internal projects, such as constructing a plant, project management is concerned primarily with costs. This is because the outcome of the project benefits the organization and is not sold to a customer. Because no sales are involved, no revenues are created. In contrast, external projects such as building an aircraft for a customer generate both costs and revenues.

Projects rely on resources and capabilities available in other processes. For example, building an aircraft involves purchasing materials (procurement process), making components from these materials (production), supervising people (HCM), and so on. External projects are also integrated with selling to customers (fulfillment). [Figure 1-10](#) illustrates a simplified project management process. The diagram does not identify the specific functional areas in which the work needed to complete the project is performed because this will vary depending on which other processes are involved.

In the planning phase the scope of the project is defined, and the milestones and deadlines are set. The budgeting phase triggers the accounting processes to calculate and allocate the resources needed to execute the project. The project is not executed until management approves the budget. During the execution phase the needed processes (e.g., procurement and production) are triggered. In addition, accounting processes are used to keep track of costs and revenues and, for external projects, to issue customer invoices. Finally, throughout the life of the project and at the end of the project an accounting process called *settlement* is periodically carried out to assign costs and revenues to the appropriate parties.



Figure 1-10: A project management process

FINANCIAL ACCOUNTING—TRACK FOR EXTERNAL REPORTING

Financial accounting is concerned with *tracking the financial impacts of processes* with the primary goal of meeting legal and regulatory reporting requirements. Thus, it is externally focused. Common reports include the income statement or profit and loss (P&L) statement and the balance sheet. The income statement indicates the organization's financial condition within a specified period of time. It identifies revenues, expenses, and net profit (or loss) for the period. In contrast, a balance sheet indicates the financial condition of an organization at a given point in time. It identifies assets, liabilities, and shareholders' equity. All of these reports must comply with prescribed standards, such as the generally accepted accounting principles (GAAP) in the United States and Handelsgesetzbuch (HGB) in Germany. These reports must be submitted to regulatory agencies at prescribed times, such as annually or quarterly. Finally, these reports are country specific. Therefore, an enterprise that operates in multiple countries must track financial data separately for each country, using that country's prescribed standards.

Various steps in the different processes introduced earlier in this chapter have an impact on an organization's financial status. Organizations analyze this impact using four key processes based in financial accounting: general ledger, accounts receivable, accounts payable, and asset accounting. The *general ledger* process records the impacts of various process steps on a company's financial position. The impacts are recorded in a number of *accounts* in the *general ledger* that represent an organization's income, expenses, assets, and liabilities. These accounts are used to store accounting-relevant data from process steps. *Accounts payable* is associated with the procurement process and is used to track money that is owed to vendors. Similarly, *accounts receivable* is used to track money owed by customers. Accounts receivable and accounts payable automate the general ledger entries associated with the procurement and fulfillment processes so that the financial impact of these processes is recorded automatically. Finally, *asset accounting* is concerned with tracking financial data related to assets such as machinery and cars.

MANAGEMENT ACCOUNTING—TRACK FOR INTERNAL REPORTING

Whereas financial accounting is concerned with external reporting that is mandated by laws and regulations, **management accounting**, or **controlling**, is concerned with *tracking costs and revenues* for internal reporting that is intended to help management control costs and revenues

and assess the profitability of various products and market segments. Management creates these reports to support its decision making. Unlike financial accounting reports, management accounting reports are produced as needed and can contain any information that management deems necessary.

Among the major costs management accounting tracks are materials costs, labor costs, and overhead costs. Management takes these costs into account when it establishes prices for its products or services. It then combines these data with information concerning revenues to determine the profitability of various products and services in different market segments. Ultimately, management utilizes all of this information to make key strategic decisions that affect the organization's products market mix as well as tactical decisions that influence day-to-day operations.



Throughout this book, we will use the case of **Global Bike Incorporated (GBI)** to illustrate important concepts, processes, and techniques. GBI is a fictional company, and its operations have been greatly simplified to make its business processes and its SAP ERP system easier for you to work with. Although GBI might seem complex as you progress through the chapters of this textbook, rarely will the business operations of a real-world company be as simple as those found in GBI.

Much the data used in this textbook are based on GBI and represent the many aspects of its fictional suppliers, customers, employees, and materials. In addition, all of the hands-on exercises are intended to be completed in a functioning (live) SAP ERP system that is configured with GBI data. (Enterprise Resource Planning, or ERP, systems integrate a company's various functional and cross-functional business processes. We explain ERP systems in greater detail in [Chapter 2](#).) It is very important that you quickly become familiar with GBI and their business operations in order to master the key concepts in this course and to complete your course assignments.

The following paragraphs provide a brief overview of GBI. However, you must retrieve the detailed GBI Annual Report from the *WileyPLUS* course site (explained later) or the SAP *University Alliances Community (SAP UAC)* at <http://uac.sap.com> to learn the full story of how GBI came into existence and to familiarize yourself with the specifics of the company's operations. The SAP UAC is a free site for all university students who are enrolled in an SAP course. The registration process is very simple and is free. In addition to the detailed GBI information on the SAP UAC site, you will also gain access to several SAP career services, including certification information and internship and job opportunities. Your instructor can show you where to access the GBI Annual Report on the SAP UAC site once you have registered.

GBI was founded in 2001 following the merger of two bicycle manufacturers, one based in the United States and the other in Germany. GBI has three lines of business: deluxe and professional touring bikes, men's and women's off-road bikes, and bike accessories. GBI sells its bikes to a

network of specialized dealers throughout the world, and it procures its raw materials from a variety of suppliers globally.

GBI has two manufacturing facilities, one in the United States and one in Germany. It also has three additional warehouses, two in the United States and one in Germany. GBI has more than 100 employees globally. The organization uses SAP ERP to support its processes. [Figure 1-11](#) illustrates GBI's enterprise structure.



Figure 1-11: GBI enterprise structure

● HOW TO USE THIS BOOK

This edition of *Integrated Business Processes with ERP Systems* does not cover all of the processes introduced in this chapter. [Chapter 2](#) is an introduction to enterprise systems, and [Chapter 3](#) discusses financial accounting. [Chapters 4-8](#) address the key logistics processes: procurement, fulfillment, production, warehouse management, and material planning. Finally, a concluding chapter discusses all of these processes from an integrated perspective. In addition, the exercises and demonstrations included in this book are available online via *WileyPLUS*.

CHAPTER STRUCTURE

As the previous paragraph indicates, most chapters will focus on a specific process, such as procurement, financial accounting, and production. Most of these chapters share a common structure. Each chapter begins with a review of the simple presentation of the process introduced earlier in this chapter. The chapter then segues to a detailed discussion of data, key concepts, and process steps. General concepts related to data—*organizational data*, *master data*, and *transaction data*—will be introduced in [Chapter 2](#). Each subsequent chapter will focus on the specific concepts and data that are relevant to the process discussed in that chapter. Most chapters require you to understand a few fundamental concepts, which are discussed next. Note that many of the concepts related to organizational and master data are relevant to more than one

process. In such cases, we do not repeat the discussion of these concepts. Rather, we refer you to previous chapters where they were discussed.

The third main component of each chapter consists of a detailed discussion of the various steps involved in the process. Each process step will be discussed using the following framework:

- Triggers: the event(s) that cause(s) the process step to be initiated
- Tasks: the specific steps needed to complete the process step
- Data: the information associated with each process step
- Outcomes: the specific products or consequences of the process step

The fourth component of each chapter is reporting. This section examines how the data generated during the process steps are converted into meaningful information. It also provides examples of the types of reports that can help managers improve process performance.

Going further, each chapter employs three pedagogical tools—demonstrations, real-world cases, and exercises—to reinforce the material. Demonstrations illustrate either a particular concept or the execution of a process step in the SAP ERP system. These demonstrations are in the form of animations that can be viewed multiple times. Real-world cases are vignettes from actual companies that illustrate a concept or demonstrate how that company executes a process. Exercises to be completed in an SAP system configured with GBI data provide a final reinforcement of the chapter's key concepts.

SAP SOFTWARE

SAP (pronounced by saying each letter individually, like IBM or ABC) is the pioneer in enterprise systems. SAP was the first company to build a packaged enterprise system, which means that it designed a single piece of software that is used by many companies. Prior to that time, software developers had to create customized software for every company, which was prohibitively expensive.

SAP introduced the first integrated, end-to-end enterprise system, called SAP® R/3, in 1992. The “R” in R/3 stands for “real time.” Prior to the development of enterprise systems, companies typically employed a number of different systems, each of which supported a single function or department. Thus, there were sales systems, accounting systems, manufacturing systems, and so on. These systems were not integrated, so sharing data between and among them was problematic. As you might expect, this architecture regularly experienced delays in executing business processes because data had to be transferred from one system to the next as the process was being performed.

SAP R/3 was designed to eliminate these inefficiencies by executing an entire process from start to finish and consolidating all of the process data in a *single database*. Consequently, regardless of which individuals were completing a step in the process, all of the data were available to them in real time. In addition, everyone else in the company could see the status of the process in real time as well. In today's age of Twitter and RSS feeds, this development might seem trivial. At the time, however, it was a crucial innovation. SAP R/3 was quickly adopted by one major

corporation after another, and it catapulted SAP software onto the “must do” list for nearly every large company. By 2010, SAP had more than 110,000 customers in over 120 countries, including nearly every Fortune 1000 company. In 2008, SAP's market share in the ERP category was equivalent to the market share of the next four largest ERP vendors—combined.^{3,4} Today, more than 75% of SAP's customers are small and medium-sized businesses. Enterprises of every size, in every industry, all over the world use SAP software to manage their business operations. Regardless of where you live, nearly every major corporation, government entity, and nonprofit organization you are familiar with runs the same SAP software that you will use in this course.

Before you start to think that this book is a marketing brochure for SAP, you should understand why we have explained SAP's strategic importance in business and have selected SAP ERP as the reference system for this textbook. One of the most lucrative and rewarding careers in the IT industry for nearly 20 years has been that of an SAP consultant.⁵ Contrary to what you may have heard, most SAP consultants are *not* programmers. Rather, they are MIS and business majors who have developed a process perspective on business and have become competent in a specific capability of the SAP ERP system. However, even technical programmers who wish to work with SAP must have a deep understanding of how business works in order to program applications that enable business processes to operate more efficiently. In other words, they are people just like you who have mastered the material in this textbook.

Integrated Business Processes with ERP Systems will incorporate a number of demonstrations, examples, and hands-on exercises using SAP ERP. Several other companies offer enterprise systems that have similar capabilities, but it would be very difficult to explain how processes are executed in each of them. We have chosen to include the most prevalent and widely used ERP system that you are likely to encounter in your career. Although some of the concepts in this textbook are specific to SAP ERP, you can easily transfer nearly everything you learn to whichever system is used in the companies where you will work.

When SAP first introduced R/3, almost anybody could claim to be an R/3 expert and thus become a highly paid consultant. Unfortunately, this practice led to quite a few well-publicized project failures. In response, SAP introduced *certifications* for the various modules and technical skills required to be a properly trained consultant. This arrangement enabled consultants who participated in SAP training programs and demonstrated a high degree of skill to distinguish themselves for potential employers. Today, SAP provides more than 100 certification types, classified by solution, focus area, and role. Each certification type specifies three levels of skill: associate, professional, and master. It can take many years and tens of thousands of dollars to progress up to master-level certification. SAP is very proud of the high level of knowledge and skills that are required to earn certification. As you probably suspect by now, the SAP testing process is extremely rigorous. Because an SAP certification is such a highly valued credential, once you have earned one, SAP provides you with a certification number that can be listed on your resume or CV and verified by potential employers—the thousands of consulting companies that implement SAP software and the more than 110,000 (in 2010) companies that run SAP software.

As an added benefit to students enrolled at universities or technical schools that are members of the SAP University Alliances Program, SAP offers special certification academies on campuses

around the world where students can earn the same certification as professionals at a reduced cost. This textbook and the additional online materials are based on the content in the SAP course, which results in an official SAP Associate Application Consultant certification and can be used as a supplement to the SAP course materials. Alternatively, students who master the concepts in this textbook and the additional online materials can take the SAP certification exam at one of over 8,000 global testing centers without participating in a certification academy.

Students who pass the exam will receive the same official SAP certification as working professionals who complete an SAP-sponsored training program. Earning this certification is the first step toward a successful and perhaps lucrative career as an SAP application consultant. Speak with your instructor, and consult the certification information on the SAP University Alliances Community and *WileyPLUS* for more details.

WILEYPLUS

WileyPLUS is an important online supplement to this book. It includes four key components: hands-on exercises, SAP ERP system demonstrations, online chapters, and information about preparing for the SAP certification exam.

The hands-on exercises found on the *WileyPLUS* companion site for this textbook will guide you through the execution of the process steps found in each chapter. You will complete these exercises in a live SAP ERP system based on Global Bike, Inc., which you will become very familiar with throughout the chapters. In essence, you will assume the role of the various employees of GBI and complete their tasks in the SAP ERP system, as if you were doing their job. In this way, you will see the processes executed from multiple viewpoints and thus further develop your “process perspective” of the firm. Your instructor will provide you with login information and the SAP interface to complete these exercises in the SAP ERP system. We anticipate that you will encounter some difficulties while completing the exercises. Nearly every student does, so don't become discouraged if this happens to you. Your instructor or lab assistant can provide some help if you are working in an on-campus lab. You can also seek help from fellow students in your class. One of the most valuable sources of assistance is the SAP University Alliances (SAP UAC) discussion forum for this textbook. Go to www.extrabandwidth.com/forum, which will redirect you to the SAP UAC forum, where you can ask questions about the text and the exercises. Students and professors around the world will quickly assist you. If you receive a helpful answer, you can award points to the person who helped you. Not only is this a nice form of recognition, but it helps the community reinforce its focus on mutual support and knowledge sharing.

Throughout each chapter you will see references to demonstrations that will illustrate how a particular concept, task, or data is presented in the SAP system. These demonstrations are meant to enhance your conceptual understanding of the topic by providing you with a visual and physical representation of how the system executes or displays a particular component of the process being discussed. We advise you to follow the demonstrations on the *WileyPLUS* website while reading and reviewing the chapter in the printed textbook. For the online version of the textbook on *WileyPLUS*, the demonstrations are linked directly from the references in the chapter for easy access. Going further, the demonstrations are very similar to the activities required in

the exercises. Therefore, it will be helpful to review the demonstrations prior to attempting the exercises so as to familiarize yourself with the navigation, key data, and activities required to complete the process steps.

CHAPTER SUMMARY

This chapter introduced the key concepts related to common business processes in organizations, the typical functional structure that companies employ to manage their operations, and the benefits of adopting a holistic view of integrated business processes and their role in effectively translating corporate strategy into operational efficiency.

Most companies are organized according to functional departments, which group together related activities and assets under specialized management controls. Although this approach enables companies to focus resources on specific activities, it also creates communication difficulties and delays between the highly specialized groups. Business processes cut across the vertical barriers (silos) that characterize the functional structure. For this reason they require cross-functional communication and collaborative execution.

Enterprise systems allow companies to effectively manage business processes across functional areas and institutional boundaries. They perform this task by removing barriers to sharing and accessing information, thereby providing a holistic platform to execute integrated business processes consistently and efficiently. One of the key benefits to managing business processes with an integrated enterprise system is that process data are collected throughout the execution of each step of the process. Managers can then use these data to monitor and improve the organization's processes. Enterprise systems enable companies to achieve operational efficiency through transparency across functional areas, and they provide consistent information for managerial decision making. All business processes have an impact on the organization's financial status, and the real-time impact of process execution can be monitored and analyzed through the use of an integrated enterprise system.

KEY TERMS

Asset management and customer service processes

Business process

Controlling

Enterprise systems (ES)

Financial accounting (FI) processes

Fulfillment process

Functional structure

Global Bike Incorporated (GBI)

Human capital management (HCM) processes

Inventory and warehouse management (IWM) process

Lifecycle data management process

Management accounting or controlling (CO) processes

Material

Material planning process

Procurement process

Production process

Project

Project management processes

Silo effect

REVIEW QUESTIONS

1. Describe the functional organizational structure. Why do you think this structure is so widely used?
2. What is the silo effect? Why does it exist? What problems does it create? How can an organization reduce or eliminate the silo effect?
3. What is a business process? Why is adopting a process view of organizations essential to becoming a successful manager?
4. Briefly describe the key business processes included in this chapter in terms of their key steps.
5. Explain the interrelationships among the key processes included in this chapter. Why are these interrelationships important?