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CHAPTER 11

THE BILLING/ACCOUNTS RECEIVABLE/CASH RECEIPTS (B/AR/CR) PROCESS

LEARNING OBJECTIVES

AFTER READING THIS CHAPTER, YOU SHOULD BE ABLE TO:

- DESCRIBE THE RELATIONSHIP BETWEEN THE B/AR/CR PROCESS AND ITS BUSINESS ENVIRONMENT.
- ILLUSTRATE THE POTENTIAL OF THE B/AR/CR PROCESS TO ASSIST MANAGEMENT DECISION MAKING.
- SUMMARIZE HOW ENTERPRISE SYSTEMS, E-BUSINESS, AND OTHER TECHNOLOGY CAN IMPROVE THE EFFECTIVENESS OF THE B/AR/CR PROCESS.
- DEPICT THE LOGICAL AND PHYSICAL CHARACTERISTICS OF THE B/AR/CR PROCESS.
- PREPARE A CONTROL MATRIX FOR SOME TYPICAL BILLING AND CASH RECEIPTS PROCESSES, INCLUDING AN EXPLANATION OF HOW BUSINESS PROCESS CONTROL PLANS CAN ACCOMPLISH OPERATIONS AND INFORMATION PROCESS CONTROL GOALS.

Stacey Cox is the vice president and chief financial officer (CFO) at CableSystems, Inc., an independent provider of cable television and high-speed Internet services.[1] Stacey has developed a new way to bill customers and receive payments. This is how Stacey, in her own words, described the proposed system to Chuck Wild, the president and CEO of CableSystems, and other VPs.

> For some time now, we have known that we need to reduce the number of days between the date customers are billed each month and the date the customers' payments become available to CableSystems.[2] This is what I propose.
>
> Each month we will place customer bills on our Web site and send an e-mail telling each customer that his or her bill is there. This is called *electronic bill presentment*.

1 The story of CableSystems, Inc. and the cast of characters are disguised and adapted from a number of sources describing Electronic Bill Presentment and Payment (EBPP) services for B2C billing processes at real-world companies. In Chapter 13, we describe Electronic Invoice Presentment and Payment (EIPP), the B2B equivalent of EBPP.

2 This is commonly referred to as days sales outstanding (DSO) and is a key measure of the effectiveness of the B/AR/CR process.

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Customers will log on to our Web site, view the bill, and execute payment. This is called *electronic bill payment*.

Because customers will receive their bills more quickly and make their payments in a timelier manner, the cash flow for CableSystems will improve and we will have additional funds available to invest in new technology and programming. In addition, the costs associated with preparing and sending bills will be reduced by about 12 percent.

Dora Wolman, the VP of marketing, liked the idea of customers coming to the Web site each month. CableSystems could place advertising on the site to encourage customers to buy additional goods and services.

Bill Shuman, the VP and chief information officer (CIO), added that the Web site also could be designed to provide customer information and services. For example, customers could review their bills and send e-mails to customer service if they wanted to dispute any portion of it. Dora particularly liked Bill's idea because she has been trying to reduce the billing-related calls to the customer service center.

By the end of the meeting, the group decided that the development of an Electronic Bill Presentment and Payment system would create great advantages for CableSystems, Inc. Chuck thanked Stacey for her presentation and gave the go-ahead for the project.

Synopsis

This chapter covers the billing/accounts receivable/cash receipts (B/AR/CR) process. A close relationship exists between this process and the order entry/sales (OE/S) process you studied in Chapter 10. In fact, many firms do not distinguish the two processes as clearly as we do in this book. In combination, the OE/S and B/AR/CR processes comprise the order-to-cash process depicted in Figure 2.7 on pg. 53 in Chapter 2.

ENTERPRISE SYSTEMS

E-BUSINESS

CONTROLS

This chapter first defines the B/AR/CR process and describes its functions. In addition to recording the relevant business events, we emphasize the importance of this process in meeting customer needs and show how companies have used the B/AR/CR process to gain competitive advantage. This includes exploring the technologies used to leverage the process and to compete in an increasingly *enterprise systems* and *e-business* driven environment. Based on this business environment, we explore the imprint of the B/AR/CR process on the organization, again taking both a horizontal and vertical perspective. We follow this with a discussion of both the logical and physical process implementation. As in Chapter 10, *control* issues are dispersed throughout the chapter and are summarized by using the control framework of Chapter 9.

Introduction

The OE/S process performs the critical tasks of (1) processing customer orders and (2) shipping goods to customers. The B/AR/CR process completes the order-to-cash process by accomplishing three separate yet related activities: (1) billing customers, (2) managing customer accounts, and (3) securing payment for goods sold or services rendered.

The **billing/accounts receivable/cash receipts (B/AR/CR) process** is an interacting structure of people, equipment, methods, and controls designed to create information flows and records that accomplish the following:

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- Support the repetitive work routines of the credit department, the cashier, and the accounts receivable department.[3]
- Support the problem-solving processes of financial managers.
- Assist in the preparation of internal and external reports.

First, the B/AR/CR process supports the repetitive work routines of the departments listed by capturing, recording, and communicating data resulting from the tasks of billing customers, managing customer accounts, and collecting amounts due from customers. Next, the B/AR/CR process supports the problem-solving processes involved in managing the controller and treasury functions. For example, the credit manager, reporting to the treasurer, might use an accounts receivable aging report in making decisions about extending further credit to customers, dunning[4] customers for payment, or writing off worthless accounts. Finally, the B/AR/CR process assists in the preparation of internal and external reports, including GAAP-based financial statements.

The B/AR/CR process occupies a position of critical importance to an organization. For example, an organization needs a rapid billing process, followed by close monitoring of receivables, and a quick cash collections process to convert sales into working resources (e.g., cash) in a timely manner. Keeping receivables at a minimum should be a major objective of a B/AR/CR process. Although we tend to associate the B/AR/CR process with mundane recordkeeping activities, the process also can be used to improve customer relations and competitive advantage. We discuss more about the strategic importance of the B/AR/CR process later in this chapter. First, let's take a look at the organizational aspects of the B/AR/CR process.

Organizational Setting

Figure 11.1 and Table 11.1 present a horizontal view of the relationship between the B/AR/CR process and its organizational environment. The figure shows typical information flows, depicted as documents, generated or captured by the B/AR/CR process. The flows are superimposed onto the organizational structures related to the B/AR/CR process and the entities with which the B/AR/CR process interacts (customers, banks, and other business processes such as OE/S, general ledger, and so forth). Take some time now to review the information flows of Figure 11.1.[5]

Figure 11.1 and Table 11.1 reveal five information flows that function as vital communications links among various operations departments, business processes, and external entities. We briefly explain each flow here to give you a quick introduction to the B/AR/CR process. Although Figure 11.1 depicts the flows using a document symbol, most of them can be implemented using electronic communications (e.g., *workflow*) and data stored in the enterprise database.

3 To focus our discussion, we have assumed that these departments are the primary ones related to the B/AR/CR process. For a given organization, however, the departments associated with the B/AR/CR process may differ.

4 Dunning is a pressing, usually written, demand for payment.

5 Figure 11.1 and Table 11.1 do not depict the flows associated with managing customer accounts during the time between the billing and cash receipts processes. Those flows and processes are depicted in Figure 11.6 on pg. 387.

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FIGURE 11.1 A Horizontal View of the B/AR/CR Process

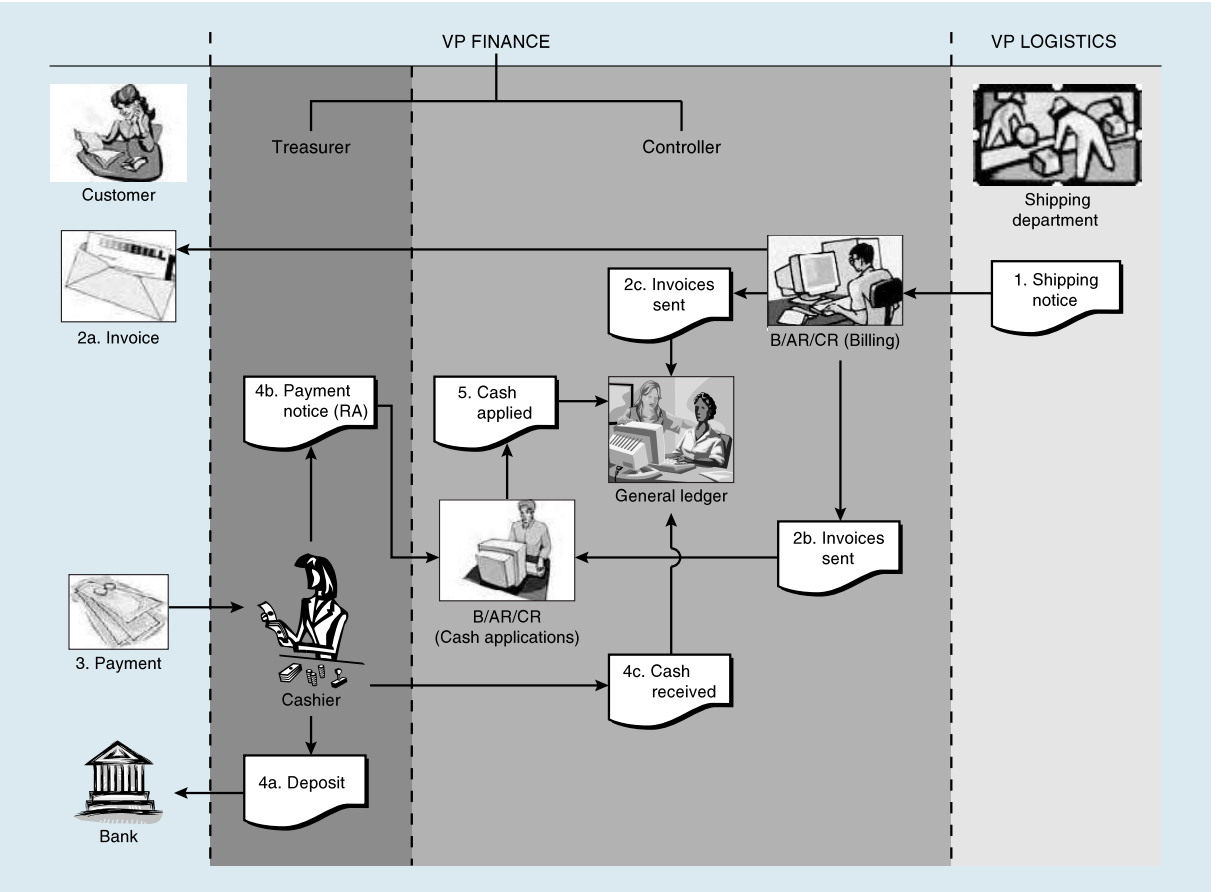

TABLE 11.1 Description of Horizontal Information Flows

Flow No.	Description
1	Shipping department informs the accounts receivable department (billing section) of shipment.
2	Accounts receivable department (billing) sends invoice (2a) to customer, accounts receivable department (cash applications [2b]), and general ledger process (2c).
3	Customer makes payment on account.
4	Cashier sends deposit to bank (4a) and informs accounts receivable department (cash applications [4b]) and general ledger process (4c) of payment.
5	Accounts receivable (cash applications) informs general ledger process of payment.

- Flow 1 apprises the billing section of the accounts receivable department that a shipment has taken place. The shipping notice need not be a document; billing might be "informed" via *workflow* or a computer batch file of shipping notices. Alternatively, the billing process may be automatically triggered by the shipment.
- Flow 2a is the invoice going to the customer. This could be a mailed paper invoice or an "electronic bill presentment." Flows 2b and 2c "inform" (via documents or

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electronic notices) the cash applications and general ledger departments/processes that an invoice has been sent. The general ledger uses flow 2c to updates sales and accounts receivable.

- Flow 3 is the customer payment, which could be a check sent to the cashier or bank or an "electronic bill payment."
- In flow 4a, the cashier deposits the payments (checks) at the bank (assumes payment in check to the cashier). Flows 4b and 4c "inform" the cash applications and general ledger processes of the payment. Again, these could be electronic.
- After matching flows 2b and 4b, the cash applications section posts the payment to the customer accounts and notifies the general ledger via flow 5. After matching flows 5 and 4c, the general ledger updates accounts receivable and cash (and cash discounts).

CONTROLS

Let's examine the important control features implicit in the assignment of responsibilities in Figure 11.1 (pg. 377). First, we see that the billing process receives external *authorization* to begin the billing process. First, there was a notice from the sales order department that a sales order had been approved (see flow 4d in Figure 11.1) and then we see the notification from logistics (flow 1 in Figure 11.1) that goods have actually been shipped. Also see the separation of the key players within the finance function, the treasurer and the controller. Most organizations divorce the operational responsibility over the security and management of funds (treasurer) from the recording of events (controller). For example, we see that the cash applications section within the controller's area (*recording* the payment) is separated from the cashier within the treasurer area (*custody* of the cash).

Using Technology to Optimize Cash Resources

The B/AR/CR process provides several opportunities to cut costs and accelerate cash flows through emerging technologies and improved management processes. The goal for treasurers, who are responsible for managing an organization's cash resources, is to free up funds so that they can be used to acquire revenue-generating assets, be invested to earn interest, or be used to reduce debt, thus saving interest charges. Of course, before cash can be invested or used for debt reduction, it first must be received and deposited. The overall management objective is to reduce costs and shorten, as much as possible, the time from the beginning of the selling process to the ultimate collection of funds. Therefore, we want to direct technology and management processes at billing, cash receipts, or both.

In the billing function, the cash management goal is to get invoices to customers as quickly as possible; with the hope of reducing the time it then takes to obtain customer payments. Having the B/AR/CR process produce invoices *automatically* helps ensure that invoices are sent to customers shortly after the goods have been shipped. Technology Summary 11.1 describes the *electronic bill presentment and payment (EBPP)* systems, introduced at the start of the chapter in the CableSystems story, that help achieve more timely billing *and* cash receipts at reduced cost.

EBPP is much more likely in the B2C space where the billing organization can expect consumers to go to a number of Web sites to pay their bills (or use a consolidating service or an online banking service). In the B2B space, where the term is EIPP (electronic invoice presentment and payment), the biller may not be in a position to require that their vendors pay using a particular method. This will be explored further in Chapter 13.

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Technology Summary 11.1

ELECTRONIC BILL PRESENTMENT AND PAYMENT (EBPP) SYSTEMS

Electronic bill presentment and payment (EBPP) systems are B2C systems that use a Web site to post customer bills and to receive their electronic payments. Two major types of EPBB systems exist. One is the *biller direct method* whereby a company posts its bills/invoices to its own Web site (or to a Web site hosted for them by a third party) and sends an e-mail notification to its customers telling them that their bill has been posted. The customers log on to the Web site, access their account, and decide what and how much to pay.[a] The details of the payment, such as customer name, customer number, bank account number, and amount to be paid, are captured at the Web site and sent to a third-party payment processor. The processor sends back a verification that allows the billing company to reduce the receivable (by posting an expected payment to the accounts receivable master data) and to notify the customer that the payment has been accepted.

At the end of each day, the third-party processor consolidates all bank transfer type payments made that day for each client (i.e., the biller organizations) and clears the payments through the automated clearing house (see Technology Summary 11.2).[b] At the conclusion of the clearing process, each biller receives a file from its bank containing a list of the customer payments (customer name, number, items paid, and amount). When the payment file is received from the bank, the biller companies change their accounts receivable data to reflect that an expected payment has been received.

The second EBPP method is the *consolidation/aggregation method* in which the bills are not posted to the billing company's Web site (or to a site hosted for them) but are posted to a Web site, such as CheckFree (see http://www.checkfree.com), that posts the bills from a number of companies. This method allows a customer to go to one site to pay bills received from many companies. With the consolidation method, you would log on to one site to pay all of your bills, rather than a site for each bill. After the bill payer logs on and decides what and how much to pay, the payment proceeds as it would under the direct biller method.

Notes:
[a] Payment options include credit card, debit card, or bank account transfer.
[b] Other settlement methods would be used for credit or debit card payments.

After the customer has been billed, the treasurer wants to reduce potential delays in collecting/depositing customer cash receipts and having those receipts clear the banking system. **Float**, when applied to cash receipts, is the time between the customer tendering payment and the availability of good funds. **Good funds** are funds on deposit and available for use. Float is a real cost to a firm and may be measured by the firm's marginal borrowing rate, assuming some type of borrowing occurs to finance the float period.[6]

The following procedures, mostly applicable in the retail/consumer space, are designed to reduce or eliminate the float associated with cash receipts:

- A **charge card**—also known as a **credit card**—is a method of payment whereby a third party such as a bank, for a fee, removes from the collector the risk of noncollection of the account receivable. The collecting company submits the charges to the credit card company for reimbursement. The credit card company bills the cardholder.
- A **debit card** is a form of payment authorizing the collector to transfer funds electronically from the payer's bank account to the collector's bank account. Some

6 Float is more of a problem in countries such as the United States where payments are often made with paper checks or their equivalent. In many countries, payments are mostly electronic and float is not a concern.

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Technology Summary 11.2

ACCELERATING CASH RECEIPTS

Electronic funds transfer (EFT) is a general term used to describe a variety of procedures for transmitting cash funds between entities via electronic transmission instead of using paper checks. The **automated clearing house (ACH)** is one of the earliest and most prominent methods for EFT in which the collector's bank account is credited and the payer's bank account is debited for the amount of a payment. If you have ever had your paycheck deposited directly to your checking account, you have been a party to an ACH transaction. Over 40,000 companies use the ACH, most of them for direct deposit. In addition, the government is a big user of the ACH. For instance, each month, millions of senior citizens have their social security checks deposited electronically through the ACH banking network. Conceptually, the essence of the ACH system is not dissimilar to that of the debit card. Through a prearranged agreement between the trading parties, the collector's bank account is credited, and the payer's account is debited for the amount of the payment. This might happen at specified recurring intervals as in the case of direct deposit, or it might be initiated by the payer—a so-called customer-initiated payment (CIP)—via a phone call or via the Web. As noted earlier, EBPP and services such as Pay By Touch use the ACH to settle payments.

Another method for accelerating cash receipts is to employ a lockbox for processing customer payments. A **lockbox** is a postal address, maintained by the firm's bank, which is used solely for the purpose of collecting checks. A firm will generally select a variety of banks with lockboxes across the country so that customer mail arrives quickly at the lockbox. The bank constantly processes the lockbox receipts, providing a quick update to the firm's bank balance, making funds available for use more quickly. To provide the collecting company with the information to update customer accounts, the lockbox bank sends the company the remittance advices (RAs), or *digital images*; photocopies of the checks, or *digital images*; and a listing, or electronic transmission, of the remittance details, prepared by *scanning* the RAs. The lockbox allows the company to post cash receipts more rapidly, at reduced cost, and with more accuracy.

With a lockbox, a bank is able to process payments more quickly than most organizations could because they have specialized resources to open the mail; encode the checks with *magnetic ink character recognition (MICR)* to indicate the amount of the payment; scan the checks to obtain the details such as check number, account number (both encoded on the check using MICR codes when the check is printed), and amount of the check; and scan the RAs to obtain those details such as customer number, invoice number being paid, and amount of the payment.

collectors find the notion of direct debit attractive because it represents the elimination of float.

- Pay By Touch is a company that processes payments at supermarkets using fingerprint scanners to link consumers to their bank or credit card accounts. The payments, which are cleared through the automated clearing house (see Technology Summary 11.2), do not eliminate float but are less expensive to process per transaction (12¢) than are bank debit cards (40¢) or credit cards (70¢).[7]
- Many of us, as consumers, have experienced a portion of the EBPP system, electronic payments, when we pay our bills using the electronic banking Web site of our bank or services such as those offered by Quicken. This method varies from EBPP in that we are not presented with an electronic bill. Or, if we were, we chose not to pay that bill at the biller's Web site thus losing the efficiencies that can be gained by responding directly to the bill. We might consider this more convenient, even though we probably reduce our float. This payment method, therefore, serves to accelerate cash flow and reduce processing costs for the collecting organization.

7 "Ready to Pay? Give Them Your Paw," *BusinessWeek*, July 11, 2005, p. 16; http://www.paybytouch.com.

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Technology Summary 11.3

CHECK 21

The Check Clearing for the 21st Century Act (Check 21) allows banks to exchange check images electronically. The act does not require that banks exchange check images; it does require that they be able to accept copies of original checks, called "substitute checks" or "image-replacement checks." Before Check 21, paper checks were flown around the country, from bank to bank, to complete the check-clearing process. During the time that this process took to complete, the payer's account had not been charged for the check (i.e., float). With Check 21, check-clearing time is significantly reduced, as is the cost of handling the paper checks.

When a check is received for deposit at a bank, it is scanned on both sides to create an image of the check to be sent, as needed, to the originator of the check. At the same time, an electronic file containing the check details is used to clear the check. The check-clearing process, therefore, can be immediate or up to one day as compared to several days before Check 21.

- *Customer self-service systems* may also serve to accelerate payments when customers, businesses or consumers, can log on to a biller's Web site to obtain information about a bill, get errors corrected, and resolve disputes leading to a more timely payment.

Technology Summary 11.2 discusses other solutions that organizations have used to shorten float, improve Internet business practices, or achieve other economies.

The electronic payment methods described here can accomplish two goals for the collecting organization, accelerating cash flows and reducing the cost of processing payments. For example, handling an online payment typically costs about 10¢ per transaction, whereas a paper check costs 30¢ per transaction.[8] But given the number of checks written in the United States (about 40 billion per year), a solution to float and cost issues associated with paper checks needs to be found. To the rescue, perhaps, comes the Check Clearing for the 21st Century Act (also known as Check 21). Technology Summary 11.3 explains Check 21, which was first introduced in Chapter 3 in the section about *electronic document management (EDM)*.

The Fraud Connection

The B/AR/CR process provides a prime opportunity to manipulate final results. One example of "cooking the books" by inflating revenues and accounts receivable, involves the case of Take-Two Interactive Software, Inc., the company that sells the hit game *Grand Theft Auto*. In 2001, Take-Two restated earnings of $15.4 million of sales that had been recorded over seven previous quarters. This restatement followed an SEC investigation of accounting practices in the videogame industry. The SEC found that companies in the industry engaged in accounting practices that led to inflated earnings and revenue. In the case of Take-Two, they had recorded as sales, shipments to distributors that were returned in subsequent quarters. Other videogame companies were found to have booked revenues on shipments of products that were held in a warehouse until the buyer was ready to take delivery. In some cases, these accounting treatments are questionable; in some cases, they are found to be fraudulent.[9]

8 "Checks Check Out," *BusinessWeek*, May 10, 2004, p. 83.

9 Don Clark and Deborah Solomon, "Leading the News: SEC Focuses on Videogame Industry; Three Software Firms Say They Are Cooperating in Accounting Investigation," *The Wall Street Journal* (July 21, 2003): A3.

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CONTROLS

We also find an abundance of illustrations of wrongdoing entailing the theft of cash—not surprising, as this is the most liquid of a company's assets. Without recounting those cases here, we would merely point out that in all too many of them, improper *segregation of duties* occurred between the functions of handling cash (*custody of resources*) and *recording* cash transactions. Where inadequate segregation of duties exists, a common scheme for misappropriating cash involves lapping customer accounts. **Lapping** is a fraud by which funds being paid by one customer are stolen, and the theft is covered up by applying funds received from another customer to the first customer's account. Funds from a third customer are applied to the second customer's account, and so on. This fraud might work as follows:

1. Wanda Wayward is the bookkeeper for Honest Harry's House of Horticulture (4Hs). She also handles cash for the company.
2. Wanda pockets cash received on account from customer A. She neither deposits the cash to 4Hs' bank account nor records it as received from A.
3. So that customer A will not complain that the cash payment was never credited, Wanda deposits cash that is later received from customer B but credits A's account for the payment.
4. So that customer B will not complain, Wanda deposits cash that is later received from customer C but credits B's account for the payment. And on it goes.

Some lapping scams have become so large and unmanageable for the perpetrator to keep covered up that there simply weren't enough hours available in the working day for the dishonest employee to manipulate the accounting records. The embezzler had to take the records, such as aged trial balances, home at night and doctor them there. Controls to *prevent* or *detect* this fraud include *rotation of duties* and *forced vacations*. Perpetrators would be reluctant to attempt this fraud if they know that they cannot continue the scheme, or the scheme will be detected, when they are replaced by another employee.

Logical Process Description

The principal activities of the B/AR/CR process are to bill customers, collect and deposit cash received from those customers, record the invoices and cash collections in customer subsidiary ledgers, and inform the general ledger process to make entries for sales and cash receipts. In addition to the billing (B) and cash receipts (CR) functions, the B/AR/CR process *manages customer accounts* (AR). Activities normally included in this process are sales returns and allowances and bad debts, as well as sending periodic statements to customers.

Logical Data Flow Diagrams

As you learned in Chapter 4 and saw applied in Chapter 10, our first view of the process is a general one, shown in the form of a *context diagram*. For the B/AR/CR process, that view appears in Figure 11.2. Take some time to examine that figure and to note the external entities with which this process interacts and the data flows running to and from those entities.[10]

10 The slash on the lower-right corner of the Customer entity square is a DFD convention used to indicate that there is more than one occurrence of the entity in the diagram.

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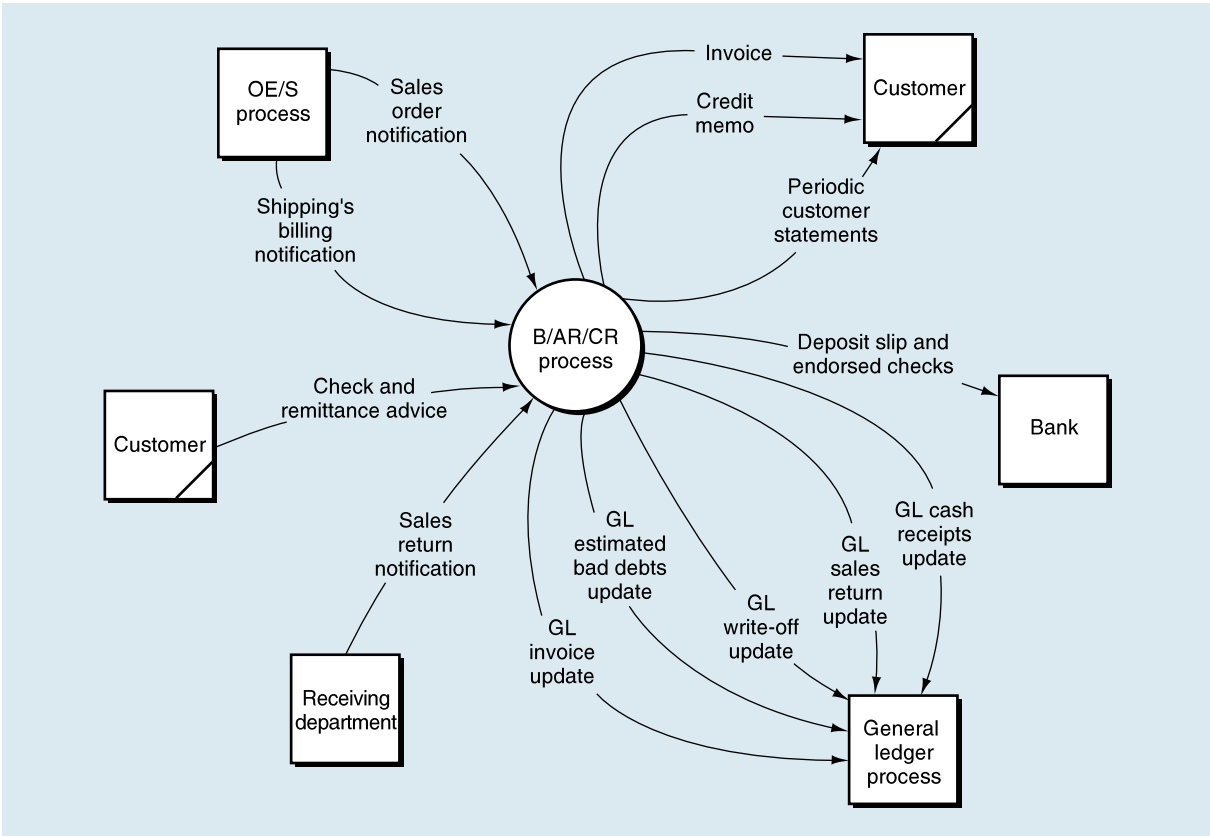
FIGURE 11.2 The B/AR/CR Process—Context Diagram



Now let's explode Figure 11.2 into the level 0 diagram reflected in Figure 11.3 (pg. 384). In this expanded view of the process, we see that the single bubble in Figure 11.2 has become three process bubbles. We also see the event and master data for this process. At this point, review Figure 11.3 and compare it to Figure 11.2 to confirm that the two Figures are "in balance" with each other.

We will now decompose each of the three processes shown in the level 0 diagram into their lower-level diagrams. Figure 11.4 (pg. 385) decomposes bubble 1.0 of Figure 11.3.

Most of Figure 11.4 should be self-explanatory. Therefore, we will comment only briefly on it. As you saw in Chapter 10, when the OE/S process produces a *sales order*, it notifies the B/AR/CR process to that effect. This is the flow "Sales order notification."[11] When *triggered* by the data flow, "Shipping's billing notification" (i.e., the shipping notice), process 1.1 validates the sale by comparing the details on the sales order notification to those shown on shipping's billing notification. Essentially, this is a comparison of the order (what was supposed to be shipped) with the shipment (what was shipped). If discrepancies are noted, the request is rejected, as shown by the reject stub coming from bubble 1.1. Rejected requests later would be processed through a separate *exception routine*.

11 Please recognize that, *physically*, this data flow could take the form of an open sales order (i.e., an order not yet shipped) in a *sales order master data store* or SALES_ORDERS relational table, both of which you saw in Chapter 10.

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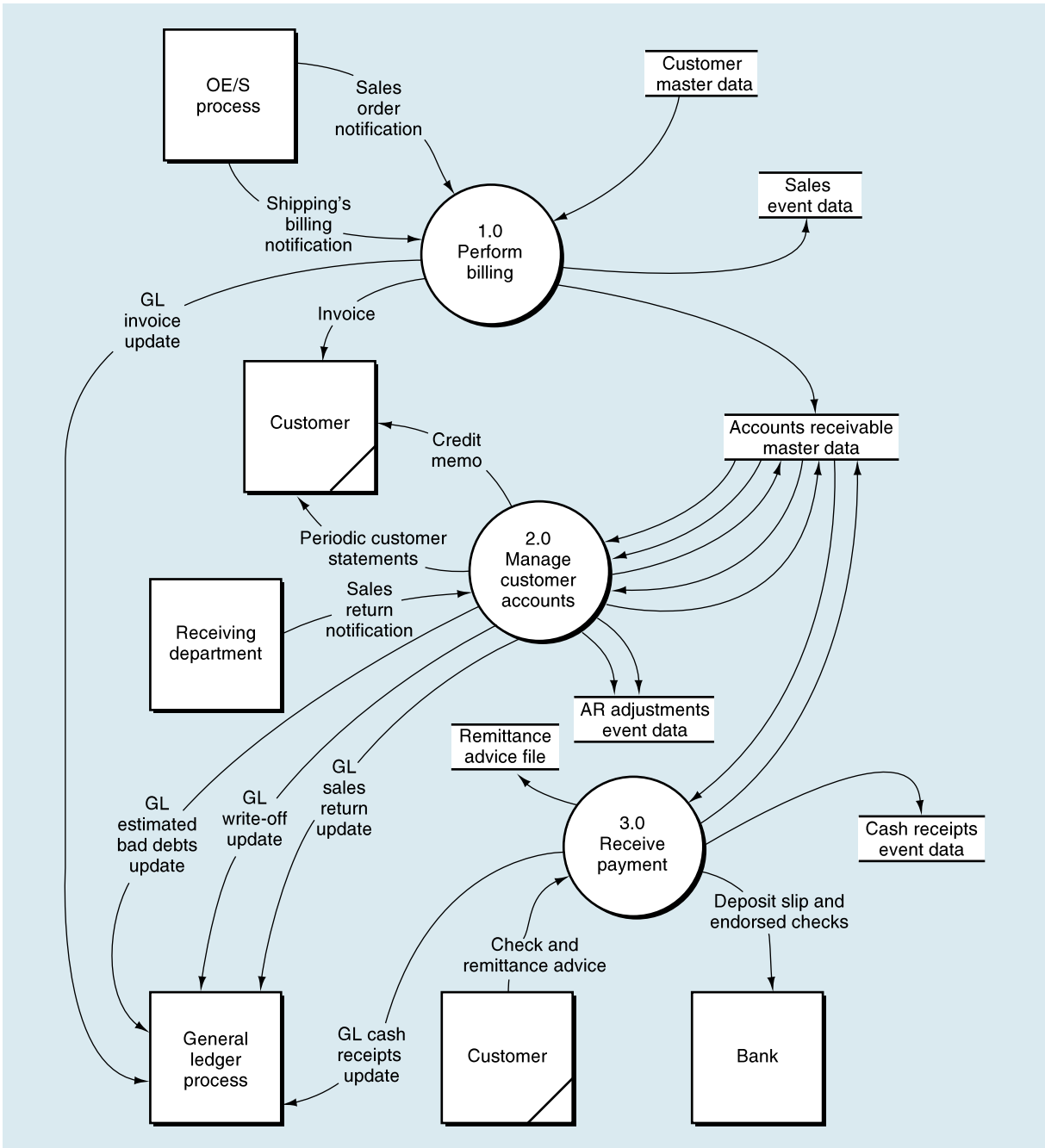
FIGURE 11.3 B/AR/CR Process—Level 0 Diagram



If the data flows match, process 1.1 sends a validated shipping notification to process 1.2. Process 1.2 then performs the following actions:

- Obtains from the customer master data certain standing data, such as the bill-to address, which is needed to produce the invoice.
- Creates the invoice and sends it to the customer.

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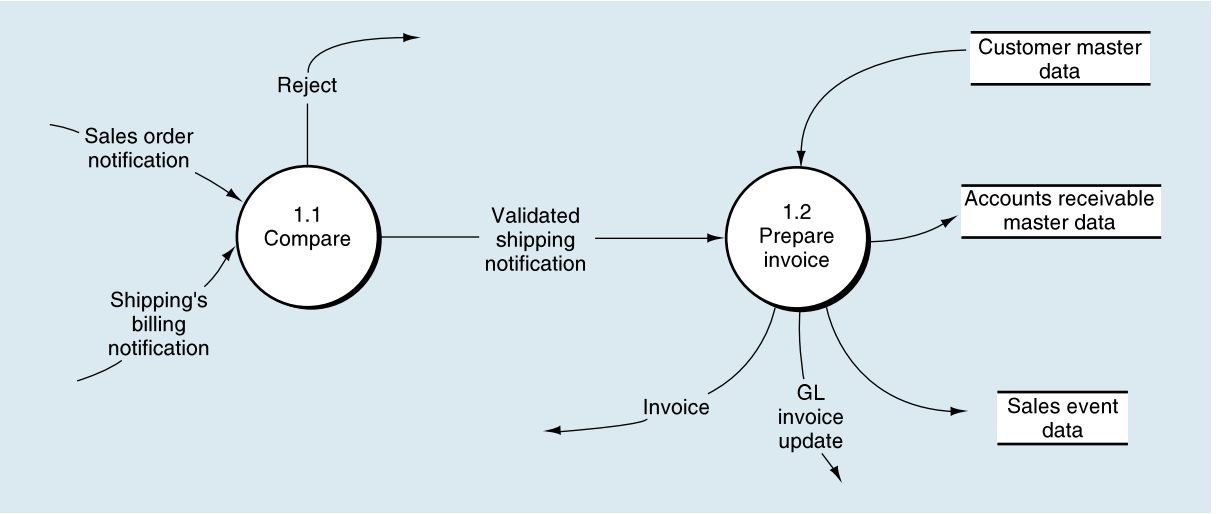
FIGURE 11.4 B/AR/CR Process—Diagram 1



- Updates the accounts receivable master data.
- Adds an invoice to the sales event data (i.e., the sales journal). This could be used for a *periodic* update of the GL for a number of sales events.
- Notifies the general ledger process that a sale has occurred (GL invoice update). This is an *immediate* update of the GL for a single sale.

In the next section, we define or explain *accounts receivable master data* and *sales event data*. Before proceeding, let's take a brief look at the information content of an invoice. Figure 11.5 (pg. 386) shows a sample invoice record for a customer.

The **invoice** is a business document used to notify the customer of an obligation to pay the seller for the merchandise (or service) ordered and shipped (or provided, if a service). Notice that the top portion of the invoice screen identifies the invoice line item being displayed (Item 10, subsequent lines would be 20, 30, etc.), the material, and when the invoice was created and by whom. The tabs can be accessed to learn the sales order number (sales document), shipping plant, and quantity (on the Item Details tab): who ordered the goods and who should be billed (on the Item partners tab): pricing and terms information (on the Conditions tab): and details of the customer's order (on the PO data tab).

Now let's take a closer look at process 2.0 in Figure 11.3. Figure 11.6 (pg. 387) is the lower-level diagram of that process.

As mentioned earlier, managing customer accounts involves an array of activities that typically occur between customer billing and later cash collection. Three of those activities are reflected in Figure 11.6: (1) sending periodic statements of account to customers, (2) accounting for sales returns and allowances or other accounts receivable adjustments, and (3) accounting for bad debts. The tasks required to properly maintain customer accounts can be fairly resource-intensive for an organization, as discussed in Technology Application 11.1 (pg. 388).

Let's examine briefly the processes that are diagrammed in Figure 11.6. In general, adjustments will always be necessary to account for sales returns, allowances for defective products or partial shipments, reversals of mispostings and other errors, estimates of uncollectible accounts, and bad debt write-offs. In Figure 11.6, processes 2.1 through 2.3 relate to just one of these, sales returns adjustments. This process begins

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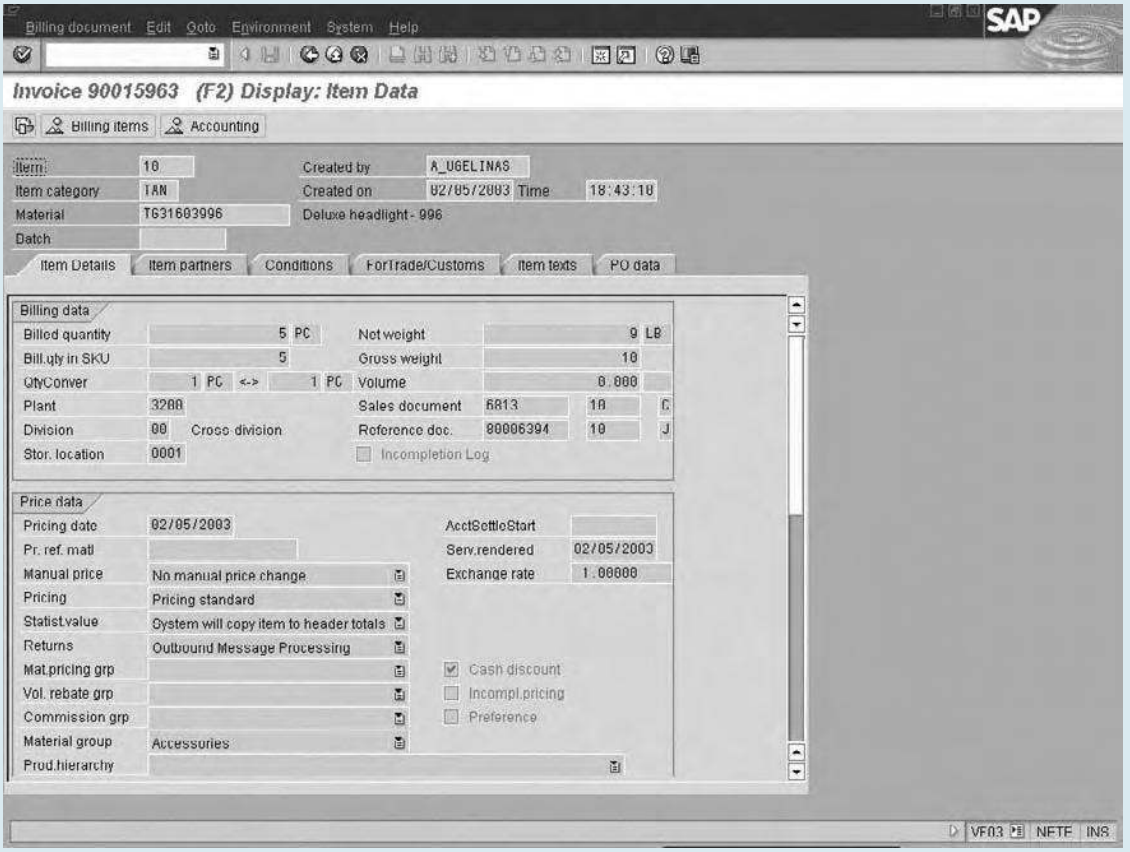
FIGURE 11.5 Sample SAP(TM) Invoice Data Screen



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when notification is received from the receiving department that goods have been returned by a customer. Process 2.5 is triggered by a periodic review of aging details obtained from the accounts receivable master data. Figure 11.7 (pg. 389) is an example of aging details, showing the amounts owed by each customer grouped into four categories: due 0–15 days, 16–30 days, 31–45 days, and over 45 days. This report would be used to identify and follow up on late-paying customer accounts. One of two types of adjustments might result from this review:

- The recurring adjusting entry for *estimated* bad debts.
- The periodic write-off of "definitely worthless" customer accounts. These might, for example, be those receivables over 120 days (a category that could be added to Figure 11.7).

Note that, regardless of type, adjustments such as those in bubbles 2.1, 2.2, 2.3, and 2.5, are recorded in the event data, updated to customer balances in the accounts receivable master data, and summarized and posted to the general ledger master data by the general ledger process.

Like process 2.5, bubble 2.4, "Prepare customer statements," also is triggered by a periodic event that recurs at specified intervals, often on a monthly basis in practice.

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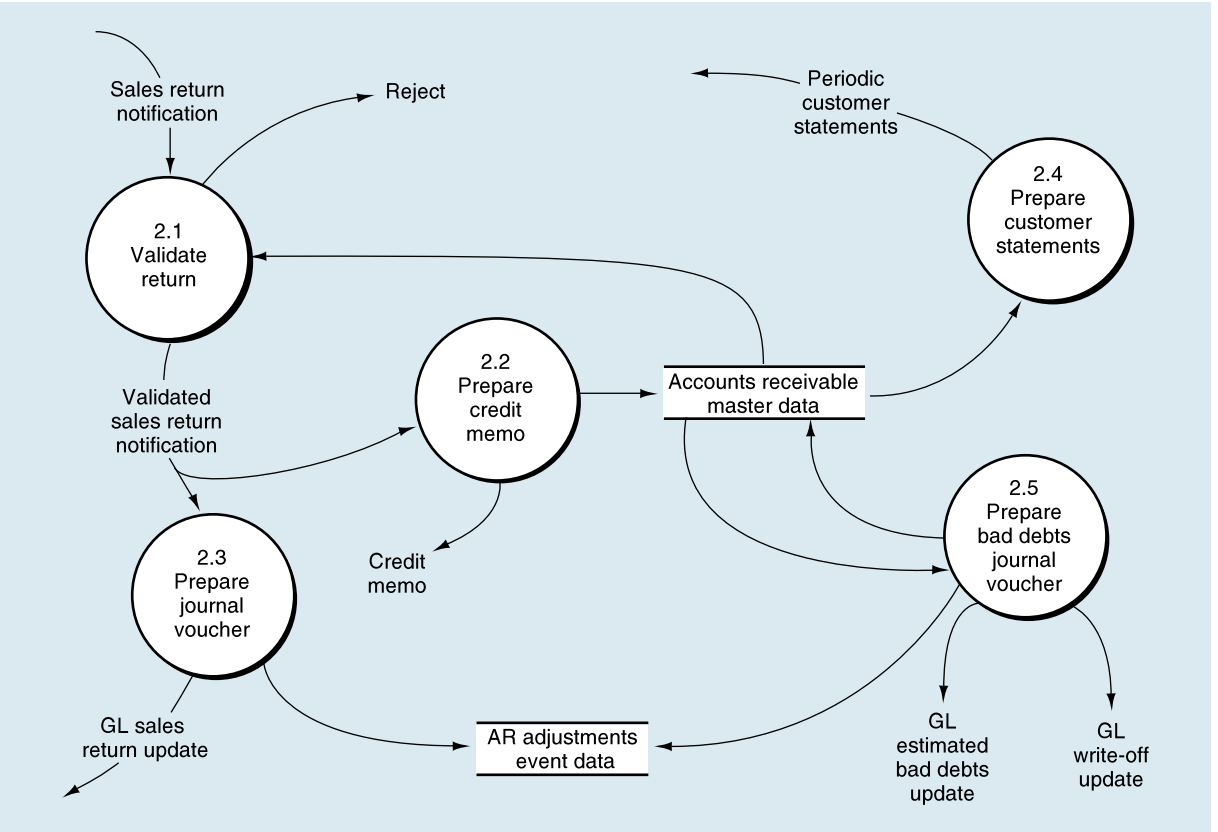
FIGURE 11.6 B/AR/CR Process—Diagram 2



Details of unpaid invoices are extracted from the accounts receivable master data and are summarized in a statement of account that is mailed to customers. The statement typically reports activity for the period, such as payments made and new charges incurred, confirms the balance owed and reminds the customer that payment is due (or overdue). Therefore, it serves both operating and control purposes.

Take some time now to track all these activities in Figure 11.6. Resolve any questions you may have before moving on.

Figure 11.8, (pg. 390) a lower-level diagram of process 3.0, "Receive payment," in Figure 11.3 (pg. 384), completes our analysis of the events comprising the B/AR/CR process. In this diagram, we see our earlier activities culminate in the collection of cash from customers.

The check and remittance advice triggers the *receive payment* process. A **remittance advice (RA)** is a business document used by the payer to notify the payee of the items being paid. The RA can take various forms. For instance, it may be a copy of the invoice, a detachable RA delivered as part of a statement periodically sent to the customer (often a "stub" attached to the statement, a *turnaround document*), or a stub attached to the payer's check. In any case, B/AR/CR uses the RA to initiate the recording of a cash receipt.

Upon receipt of the check and RA from a customer, process 3.1 first validates the remittance by comparing the check to the RA. Mismatches are rejected for later processing. If the check and RA agree, the validated remittance is sent to process 3.2, which

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TECHNOLOGY APPLICATION 11.1

INTERNET TECHNOLOGY FOR MANAGING CUSTOMER ACCOUNTS

The collection of accounts receivables and the corresponding management of customers' accounts can be a time-consuming and resource-intensive process. Because orders frequently involve multiple shipments and multiple billing arrangements, sorting all the supporting documentation to accurately bill customers and at the same time handle subsequent queries can be difficult for many organizations. The National Association of Purchasing Managers notes that the cost of processing a commercial transaction generally ranges from $14 to $162 for the supplier.

Many organizations handled this problem in the past by selling their accounts receivables (i.e., factoring) to another organization. The EBPP and EIPP services described in this chapter and Chapter 13 provides a means for business partners to access up-to-date information via the Internet. These services provide current information to both suppliers and buyers of all the data related to an order and facilitate the reconciliation of these data to reduce collection delays that can result from incomplete or inconsistent information. The result should be improved efficiency and increased cash flow for the collecting organization.

Another solution is to use the Internet to research debtors to locate those who have skipped out on their debts. One commercial collection agency reports using tools such as LexisNexis and Accurint to search for debtors using tax ID numbers, social security numbers, addresses, court records, and other documents. In this manner, customers who have intentionally (i.e., fraudulently) avoided paying their debts can be found and attempts can be made to collect the outstanding debts.

Source: Julia King, "ETime Follows The Money," *Computerworld*, December 6, 1999, Vol. 33, Iss. 49: p. 41; Scott H. Cytron, "Ideas in Motion: Paul Eisenberg: Super Sleuth of Collections," *The Insider*, March 2005, available at http://www.accountingsoftware411.com.

endorses the check and separates it from the RA. Process 3.3 accumulates a number of endorsed checks, prepares and sends a bank deposit to the bank, records the collection with the *cash receipts events data* (i.e., the cash receipts journal could be used for a *periodic* update of the GL for a number of cash receipts events), and notifies the general ledger process of the amount of the cash deposited. This is an *immediate* update of the GL for a single cash receipt.

While process 3.3 is preparing the deposit (typically performed by the cashier, a treasurer function), process 3.4 uses the RA to update the *accounts receivable master data* to reflect the customer's payment and then files the RA in the remittance advice file. Process 3.4 is typically performed by the cash applications section of the accounts receivable department, a controller function.

Logical Data Descriptions

Six data stores appear in Figure 11.3 (pg. 384). The *customer master data* was defined in Chapter 10. In this section, we describe the other five. The **accounts receivable master data** is a repository of all unpaid invoices issued by an organization and awaiting final disposition. As the invoice is created, a record of the receivable is entered in the master data. Subsequently, the records are updated—that is, the receivable balance is reduced—at the time that the customer makes the payment. As you learned in the previous section, the records also could be updated to reflect sales returns and allowances, bad debt write-offs, or other adjustments.

The accounts receivable master data provides information useful in minimizing outstanding customer balances and in prompting customers to pay in a timely manner. Two types of accounts receivable systems exist: the *balance-forward system* and the

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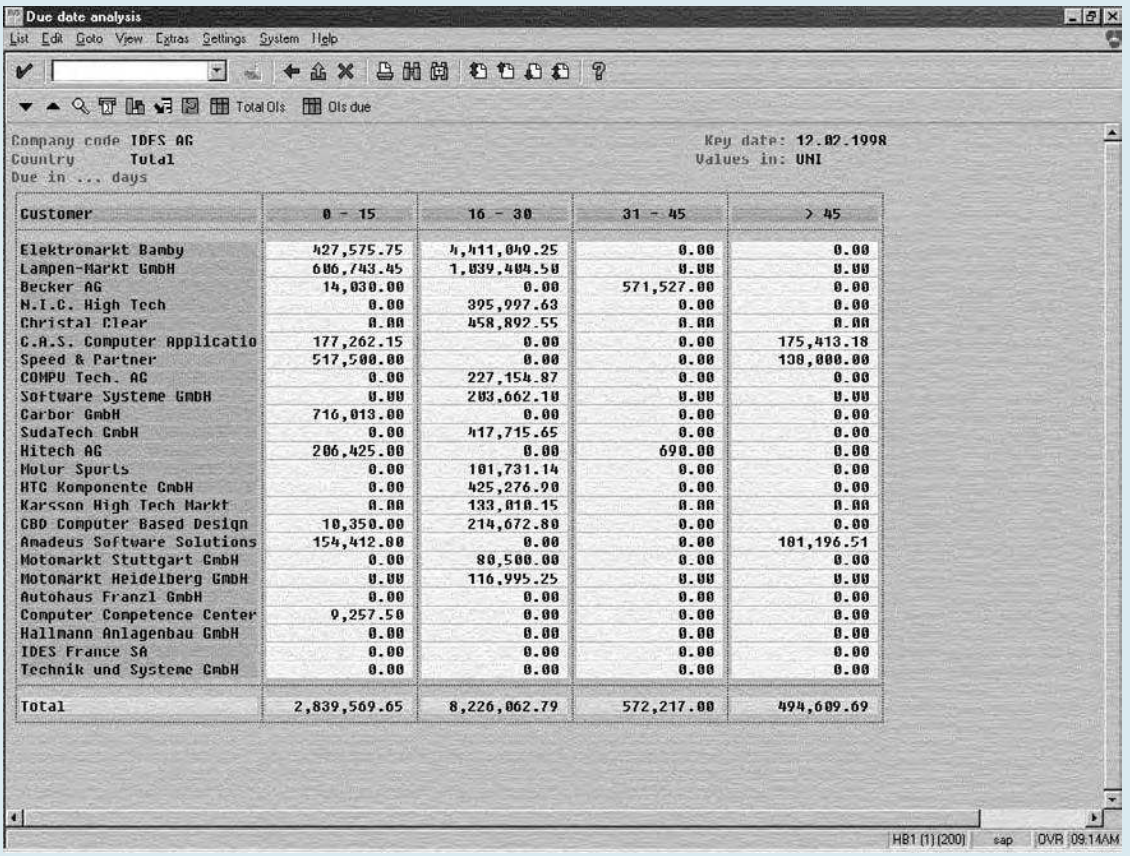
FIGURE 11.7 Sample Accounts Receivable Aging Report in SAP™



Due date analysis

List Edit Goto View Extras Settings System Help

Total OIs | OIs due

Company code IDES AG
Country Total
Due in ... days

Key date: 12.02.1998
Values in: UNI

Customer	0 - 15	16 - 30	31 - 45	> 45
Elektromarkt Bamby	427,575.75	4,411,049.25	0.00	0.00
Lampen-Markt GmbH	606,743.45	1,039,404.50	0.00	0.00
Becker AG	14,030.00	0.00	571,527.00	0.00
N.I.C. High Tech	0.00	395,997.63	0.00	0.00
Christal Clear	0.00	458,892.55	0.00	0.00
C.A.S. Computer Applicatio	177,262.15	0.00	0.00	175,413.18
Speed & Partner	517,500.00	0.00	0.00	138,000.00
COMPU Tech. AG	0.00	227,154.87	0.00	0.00
Software Systeme GmbH	0.00	203,662.10	0.00	0.00
Carbor GmbH	716,013.00	0.00	0.00	0.00
SudaTech GmbH	0.00	417,715.65	0.00	0.00
Hitech AG	206,425.00	0.00	690.00	0.00
Motor Sports	0.00	101,731.14	0.00	0.00
HTC Komponente GmbH	0.00	425,276.90	0.00	0.00
Karsson High Tech Markt	0.00	133,818.15	0.00	0.00
CBD Computer Based Design	10,350.00	214,672.80	0.00	0.00
Amadeus Software Solutions	154,412.00	0.00	0.00	101,196.51
Motomarkt Stuttgart GmbH	0.00	80,500.00	0.00	0.00
Motomarkt Heidelberg GmbH	0.00	116,995.25	0.00	0.00
Autohaus Franzl GmbH	0.00	0.00	0.00	0.00
Computer Competence Center	9,257.50	0.00	0.00	0.00
Hallmann Anlagenbau GmbH	0.00	0.00	0.00	0.00
IDES France SA	0.00	0.00	0.00	0.00
Technik und Systeme GmbH	0.00	0.00	0.00	0.00
Total	2,839,569.65	8,226,062.79	572,217.00	494,609.69

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open-item system. Both are characterized by a different method of storing and reporting information, and both result in a different format for the periodic customer statements produced from the master data.

In a **balance-forward system**, accounts receivable records consist of a customer's balance, categorized as current and past-due, and current account activity including such items as current charges, finance charges for past-due balances, and payments. Monthly statements display previous balance, payments, and balance forward to which is added any new charges to derive the total balance due. Each month, unpaid current balances are rolled into the past-due balances. Electric and gas utility companies typically use balance-forward systems. For an electric bill, for example, the only details supporting the amount of current charges are beginning and ending meter readings, total kilowatt-hours used for the period, and rate(s) per kwh.

In the balance-forward system, customers usually pay from the periodic statement rather than paying individual invoices, and payments are simply posted to the customer's account balance. In contrast, the **open-item system** is more complex and is appropriate in situations where invoices are prepared and sent for each sale (i.e., each shipment), and the customer typically makes payments for specific invoices when those invoices are due. The accounts receivable master data is organized so that each record consists of individual open invoices, against which payments and other adjustments are applied.

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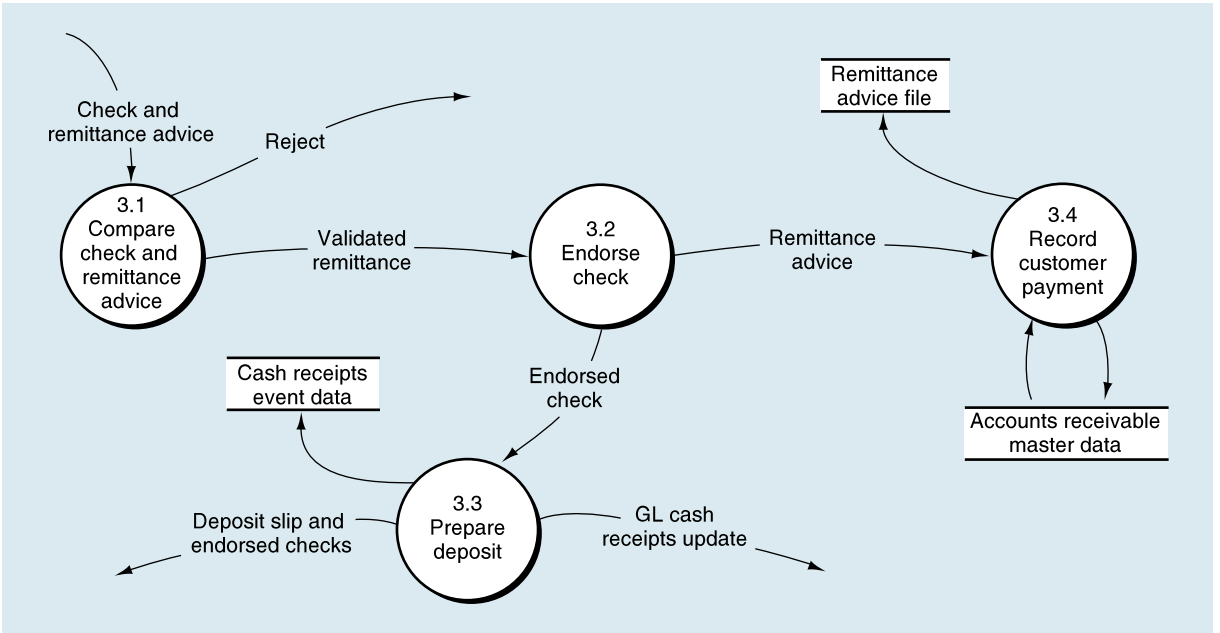
FIGURE 11.8 B/AR/CR Process—Diagram 3



On the periodic customer statement of account, invoices (new or settled in the current period) are listed, along with payment details. Also, each open invoice is grouped by aging category and aged individually. Monthly, or at specified times, the customer accounts are aged, and an aging schedule, such as the one depicted in Figure 11.7 (pg. 389), is printed.

There are four event data stores depicted in Figure 11.3 (pg. 384). First, the **sales event data** is comprised of invoice (i.e., sales) records. These records are created as the process prepares and sends an invoice. In a manual process, the sales event data would be called a *sales journal*, with which you may be familiar from earlier accounting courses.

The **accounts receivable adjustments data** is created as sales returns, bad debt write-offs, estimated doubtful accounts, or similar adjustments are processed. As in any event data, the records in this data store are typically keyed by date. The other essential data elements usually comprise journal voucher number, customer identification, adjustment type, account(s) and amount(s) to be debited, account(s) and amount(s) to be credited, and authorization indicator (i.e., approval code, signature, or the like).

The **cash receipts event data**, created when customer payments are recorded, contains the details of each payment as reflected on the *RA* accompanying a payment. In a manual process, the cash receipts event data would be called a *cash receipts journal*. Accordingly, each record in this data store normally shows the date the payment is recorded, customer identification, invoice number(s) and gross invoice amount(s), cash discount(s) taken on each invoice, net invoice amount(s), check amount, and check number. Finally, as its name suggests, the **remittance advice file** stores copies of the RAs.

Logical Database Design

We now look at how B/AR/CR data is structured, assuming a *database approach* to data management is employed. To keep the discussion simple, we will look at only two basic economic events as they relate to this process: sales invoicing and cash receipts. We also

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looked at sales invoicing in Chapter 10 because that event is the bridge between the OE/S process and the B/AR/CR process. We will not cover adjustments resulting from sales returns, bad debt write-offs, and estimated doubtful accounts. Figure 11.9 (pg. 392) illustrates an E-R diagram of the invoicing and cash receipts events.

The shaded portion at the top of the diagram is repeated from Chapter 10 (Figure 10.9 on pg. 348). To the entities from Figure 10.9, we have added the CASH_RECEIPTS, DEPOSITS, BANKS, and EMPLOYEES entities. As it was in Figure 10.9, the SALES_RELATIONS relationship accumulates a record of events as they progress. In this case, we add the cash receipts event to this relationship. Recall from Figure 10.9 that this relationship already has accumulated a record of the SALES_ORDERS, STOCK_PICK, and SHIPMENTS, which we repeat here to emphasize that the invoice is generated after the goods are ordered, picked, and shipped. The box around this relationship indicates that we will have a relation in our database for this relationship while the other relationships will not have a corresponding relation.

As with Figure 10.9, the model in Figure 11.9 is not fully normalized yet. We include the "extra" relationships and redundant attributes to help you see the logical sequence of events. Also, the notes on Figure 11.9 indicate that this is a simplified model. Certainly realistic models must deal with partial picking, shipping, invoicing, and payments.

Finally, notice the interesting phenomenon in note E. There is *no separate accounts receivable* entity! Rather, accounts receivable balances (and/or deferred revenue balances) at any point in time are computed as the *difference* between the continuous events, SALES_INVOICES and CASH_RECEIPTS.[12]

Let's next translate the E-R diagram into relations (i.e., relational tables); Figure 11.10 (pg. 393) is designed to do that.

We repeat here from Figure 10.10 (pg. 349), the CUSTOMERS, INVENTORY, SALES_ORDERS, STOCK_PICK, SHIPMENTS, SALES_INVOICES, and SALES_RELATIONS relations to emphasize the connections (linkages) among relations and to remind you that before invoicing a customer, we first have accepted a customer's sales order, picked the goods, and shipped the goods to the customer.

To simplify the tables, we have assumed that each inventory line item picked and shipped is billed at a single unit sales price from the INVENTORY relation. Further, SALES_INVOICES ignores freight, sales taxes, or other items that might be billed to a customer. By using the SALES_INVOICES relation and extracting other data, as needed, from other relations, contemplate how you would prepare the invoice *document* to be sent to the customer.

The CASH_RECEIPTS and the attributes added to the end of the SALES_RELATIONS relation (i.e., Remit_No and Remit_Amt) substitute for the cash receipts data and remittance advice data discussed in the preceding section. For simplicity, we have ignored customer cash discounts in the relations shown. First, note that Cust_No in CASH_RECEIPTS allows us to associate cash receipts with particular customers for the purpose of monitoring customer accounts and assessing any needed bad debt adjustments. In addition, Invoice_No in SALES_RELATIONS can be used to apply collections against specific open invoices (as in an *open-item accounts receivable system*, for instance). Finally, the linkages among CASH_RECEIPTS, SALES_RELATIONS, SALES_INVOICES,

12 William E. McCarthy—in his article, "The REA Accounting Model: A Generalized Framework for Accounting Systems in a Shared Environment," *The Accounting Review* (July 1982): 554–578—describes what is portrayed here as a process of producing information "snapshots" from records of continuing activities.

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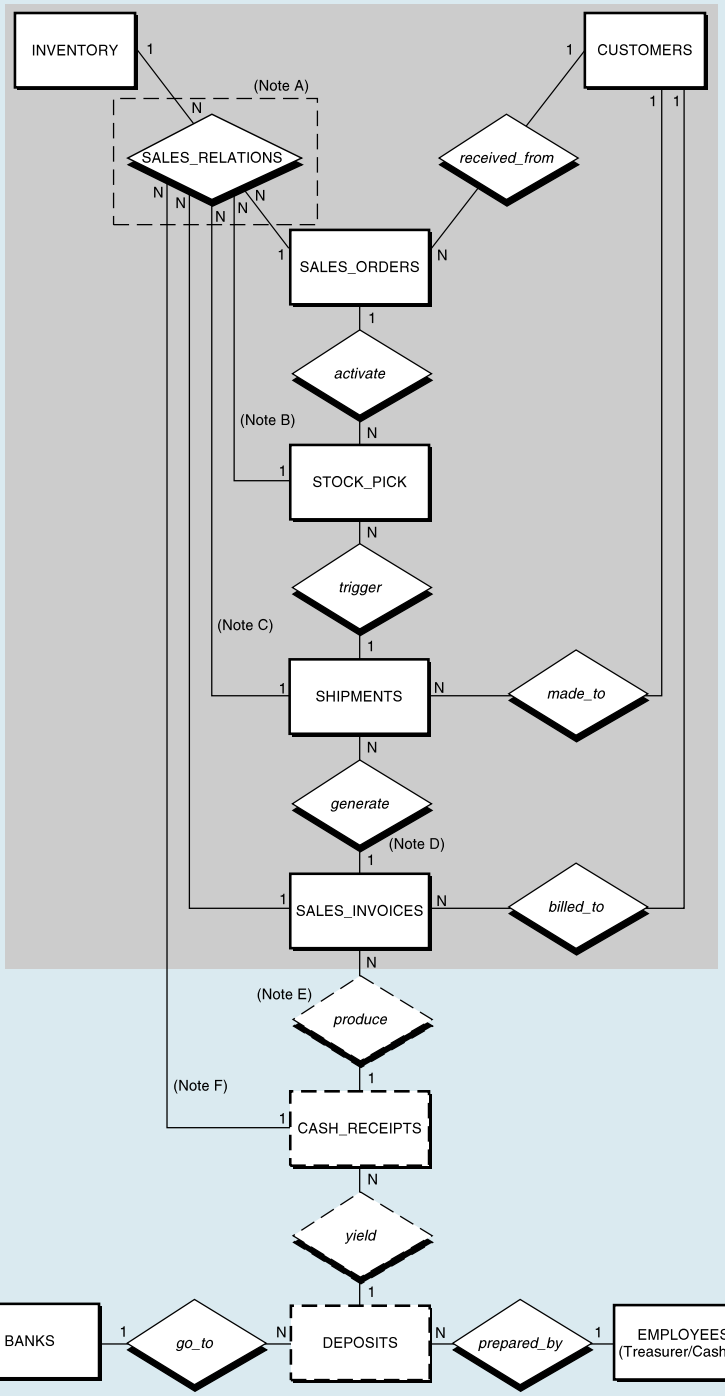
FIGURE 11.9 Entity-Relationship (E-R) Diagram (*Partial*) for the B/AR/CR Process



NOTES, for simplicity, we assume that:
A—See page 391 for an explanation of the box around SALES_RELATIONS and why the model is not fully normalized.
B—All goods ordered are picked (no partial picks).
C—All goods picked are shipped (no partial shipments).
D—All shipments are invoiced in full (no partial invoices).
E—The difference between SALES_INVOICES and CASH_RECEIPTS represents account receivable and/or deferred income.
F—A single cash receipt (remittance advice) could pay for several invoices, but there are no partial payments (all invoices are paid in full).

FIGURE 11.10 Selected Relational Table (*Partial*) for the B/AR/CR Process

Shaded_Attribute(s) = Primary Key

CUSTOMERS

Cust_No	Cust_Name	Cust_Street	Cust_City	Cust_ State	Cust_ ZIP	Ship_to_Name	Ship_to_ Street	Ship_ to_City	Ship_ to_State	Ship_ to_ZIP	Credit_ Limit	Last_ Revised	Credit_ Terms
1234	Acme Co.	175 Fifth St	Beaufort	SC	29902	Same	Same	Same	Same	Same	5000	20060101	2/10,n/30
1235	Robbins, Inc	220 North Rd	Columbia	SC	29801	ALine Fabric	2 Main St	Greenwood	SC	29845	10000	20070915	n/60
1236	Jazzy Corp.	45 Ocean Dr	Hilton Hd	SC	29910	Same	Same	Same	Same	Same	0	20070610	COD

INVENTORY

Item_No	Item_Name	Price	Location	Qty_on_Hand	Reorder_Pt
936	Machine Plates	39.50	Macomb	1,500	950
1001	Gaskets	9.50	Macomb	10,002	3,500
1010	Crank Shafts	115.00	Tampa	952	500
1025	Manifolds	45.00	Tampa	402	400

SALES_ORDERS

SO_No	SO_Date	Cust_No	Cust_PO_No	Cust_PO_Date	Ship_Via	FOB_Terms
5677	20071216	1235	41523	20071212	UPS	Ship Pt
5678	20071216	1276	A1190	20071214	Best way	Ship Pt
5679	20071216	1236	9422	20071216	Fed Ex	Destin

STOCK_PICK

Pick_No	Pick_Date	Picked_By	SO_No	Ship_No
9436	20071215	Butch	5676	94101
9437	20071215	Rachel	5677	94102
9438	20071216	Ace	5678	94103

SHIPMENTS

Ship_No	Ship_Date	Shipped_By	Cust_No	Invoice_No
94101	20071215	Jason	1293	964
94102	20071216	Carol	1235	965
94103	20071216	Jason	1249	966

SALES_INVOICES

Invoice_No	Invoice_Date	Invoice_Total	Cust_No	Remit_No
964	20071216	549.00	1293	9529
965	20071216	9575.00	1235	
966	20071217	1580.00	1249	

CASH_RECEIPTS

Remit_No	Dep_No	Total_Rec	Remit_Date
9529	116-334	1962.35	20080110
9530	116-335	369.28	20070110

BANKS

Bank_No	Bank_Name
2239	Acme
2240	Benton

DEPOSITS

Deposit_No	Dep_Date	Deposit_Amt	Emp_No (Treasurer/Cashier)	Bank_No
116-334	20080112	1962.35	D762	2239
116-335	20080112	329.28	D762	2239

SALES_RELATIONS

SO_No	Item_No	Qty_Ordered	Pick_No	Qty_Picked	Ship_No	Qty_Shipped	Invoice_No	Qty_Invoiced	Amt_Invoiced	Remit_No	Remit_Amt
5676	1074	60	9436	60	94101	60	964	60	549.00	9529	549.00
5677	1001	100	9437	100	94102	100	965	100	950.00		
5677	1010	75	9437	75	94102	75	965	75	8625.00		
5678	936	40	9438	40	94103	40	966	40	1580.00		

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and CUSTOMERS can be used to determine customer accounts receivable balances at any moment in time, as shown in the E-R diagram and explained previously.

Types of Billing Systems

In general, two kinds of billing systems exist. In a **post-billing system**, invoices are prepared after goods have been shipped and the sales order notification has been matched to shipping's billing notification. The data flow diagrams in this section and in Chapter 10 assumed a post-billing system.

In a **pre-billing system**, invoices are prepared immediately on acceptance of a customer order—that is, after inventory and credit checks have been accomplished. Pre-billing systems often occur in situations where there is little or no delay between receipt of the customer's order and its shipment. For instance, pre-billing systems are not uncommon in catalog sales operations such as that of L. L. Bean. In such systems, there is no separate sales order document as such; copies of the invoice serve as the picking ticket, packing slip, and other functions required by the OE/S process. In other words, the customer is billed (and the inventory, accounts receivable, and general ledger master data are updated) at the time the customer order is entered. However, the customer copy of the invoice is not released until shipment has been made. For this type of system to operate efficiently, the inventory control system must be very reliable. If an order is accepted, and an item then turns out to be unavailable, all accounting entries would have to be reversed.

Physical Process Description of the Billing Function

ENTERPRISE SYSTEMS

Figure 11.11 presents a physical process for the billing function. From Chapter 10, you should have a good understanding of the order entry and shipping functions leading up to the billing process. Take some time now to review the flowchart for general ideas. You should notice a close resemblance between this process's physical features and the logical design of the billing process as presented in Figures 11.2 (pg. 383), 11.3 (pg. 384), and 11.4 (pg. 385). You should also see that this system demonstrates the use of an *enterprise system* and several features of the technology discussed earlier in this chapter.

The Billing Process

At the time the sales order was recorded in the order entry department, the billing section of the accounts receivable department was "notified" that a sales order had been created. This notification is shown on the DFDs in Chapter 10 and in Figures 11.2 (pg. 383), 11.3 (pg. 384), and 11.4 (pg. 385) as the data flow "Sales order notification." In Figure 11.11, this notification is simply a sales order record (sales orders not shipped) on the enterprise database. Queries and reports (not shown in Figure 11.11) could be run to get a listing of these sales orders. Such listings would be most useful in the shipping department to ensure timely shipment of customer orders.

Throughout the day, as shipments are recorded in the shipping department, the billing section is "notified" by the shipping department. This notification is shown on the DFDs in Chapter 10 and in Figures 11.2 (pg. 383), 11.3 (pg. 384), and 11.4 (pg. 385) as the data flow "Shipping's billing notification." Again, in Figure 11.11, this notification is simply a sales order record (sales orders shipped) on the enterprise database.

In the billing section, a clerk periodically requests a list of sales orders that have been shipped but have not been billed. In the SAP™ system, this is called the "Billing

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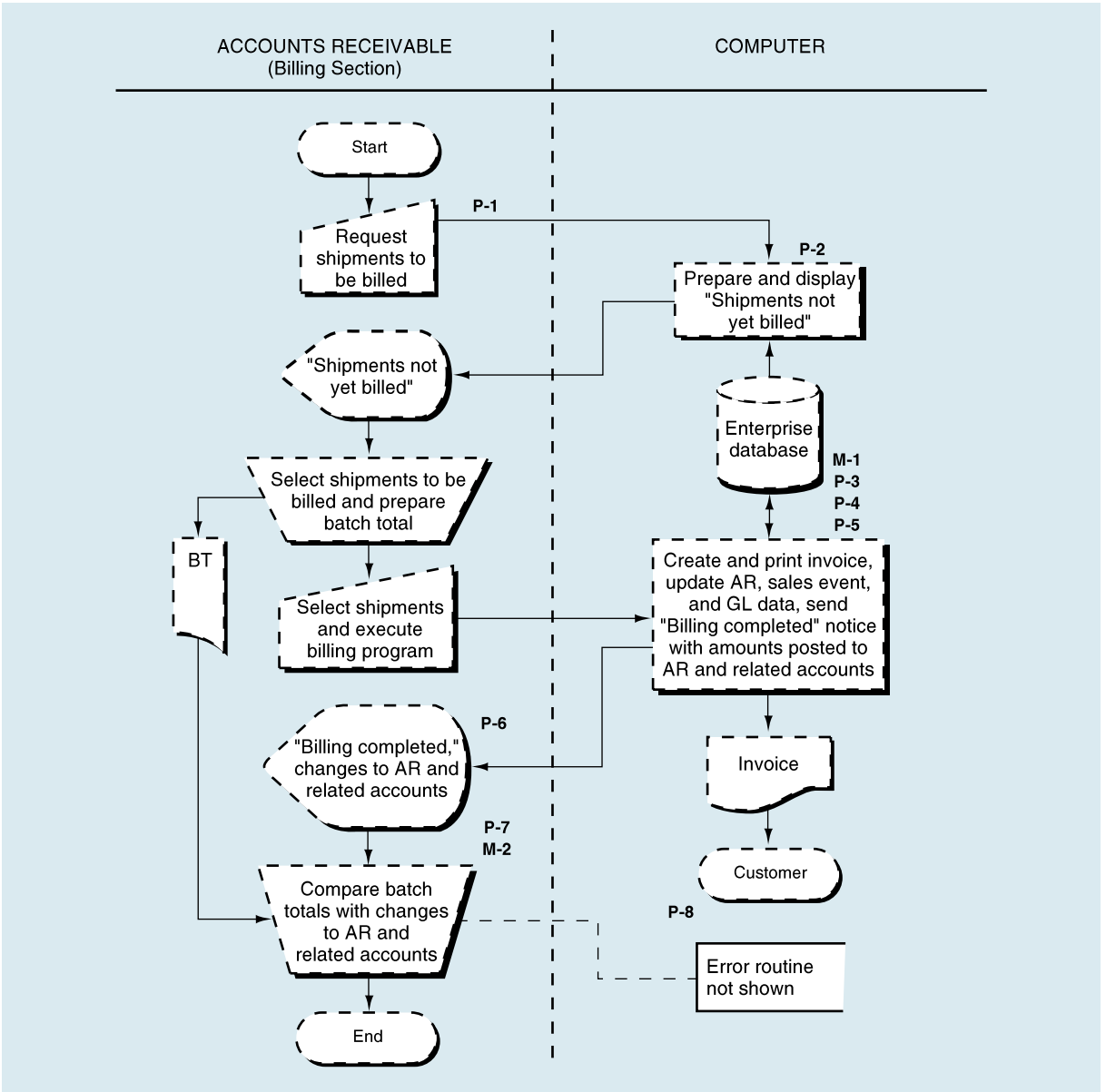
FIGURE 11.11 Systems Flowchart of the Billing Function



Due List." The clerk reviews this list, selects the items that are to be billed, prepares batch totals, and executes the billing run.

The billing program creates and prints[13] an invoice, updates the accounts receivable master data, the sales event data, and the general ledger master data to reflect the sale, and notifies the billing clerk that the run has been completed. The billing clerk compares the previously calculated batch total to the totals provided by the billing program to ensure that the billing run processed all of the selected shipments correctly.

13 The billing program could create an electronic invoice to be sent to the customer.

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Selected Process Outputs

A variety of outputs (documents, statements, and reports) are generated either during normal processing runs or during special report-generation runs. The key document produced by the process depicted in Figure 11.11 (pg. 395) is the sales invoice.

Another important document, the *customer monthly statement*, is prepared periodically, typically at the end of each month, from data appearing in each customer's accounts receivable master data record. Earlier in the chapter, we included the sending of periodic customer statements as part of the function of *managing customer accounts*. Because any physical implementation of the managing customer accounts process (i.e., the "AR" in the B/AR/CR process) would be highly redundant of the logical diagram in Figure 11.6 (pg. 387), we will not present a physical description of the AR function in this chapter.

Other analyses and reports can be prepared as needed by management. For example, if an accounts receivable aging report were desired, the relevant account data would be extracted from the accounts receivable master data. Figure 11.7 (pg. 389) illustrated a typical accounts receivable aging report.

Application of the Control Framework for the Billing Function

CONTROLS

In this section, the control framework is applied to the billing function. Figure 11.12 presents a completed *control matrix* for the systems flowchart depicted in Figure 11.11. Figure 11.11 is annotated to show the location of the control plans keyed to the control matrix.

Control Goals

The control goals listed across the top of the matrix are similar to those presented in Chapters 7, 9, and 10, except that they have been tailored to the specifics of the billing process.

The *operations process control goals* that are typical of the billing process are the following:

- *Effectiveness of operations*: Goals A through C in Figure 11.12 identify three representative *effectiveness goals* for the billing process. Goals A and B address the issues related to cash flow and management of customer accounts discussed earlier in the chapter. In addition, as mentioned in Chapters 7 and 9, the control matrices in this text incorporate as one of the effectiveness goals, when applicable, the COSO report's goal of complying with laws, regulations, and contractual agreements. For this reason, we include goal C for the billing process—comply with the fair pricing requirements of the Robinson-Patman Act of 1936. Briefly stated, the act makes it illegal for a seller to charge different prices to two competing buyers under identical circumstances unless the seller can justify the pricing differential based on differences in its cost to manufacture, sell, and deliver the goods.
- *Efficient employment of resources:* As noted in Chapter 9 and reinforced in Chapter 10, people and computers are the resources found in most business processes.
- *Resource security:* As mentioned in Chapter 9, the resource security column should identify only the assets that are *directly* at risk. For that reason, cash is not listed because it is only indirectly affected by the validity of the billings. The resource that is of interest here is the accounts receivable master data. Controls should prevent unauthorized access, copying, changing, selling, or destruction of the accounts receivable master data.

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FIGURE 11.12 Control Matrix for the Billing Business Process

	Control Goals of the Billing Business Process									
	Control Goals of the Operations Process					Control Goals of the Information Process				
Recommended Control Plans	Ensure effectiveness of operations			Ensure efficient employment of resources (people, computers)	Ensure security of resources (accounts receivable master data)	For completed shipping notice inputs, ensure:			For the accounts receivable and master data, ensure:	
	A	B	C			IV	IC	IA	UC	UA
Present Controls										
P-1: Review shipped not billed sales orders (tickler file)	P-1						P-1			
P-2: Compare input shipping notice to sales order master data						P-2		P-2		
P-3: Independent billing authorization						P-3				
P-4: Check for authorized prices, term, freight, and discounts						P-4		P-4		
P-5: Independent pricing data			P-5			P-5		P-5		
P-6: Confirm input acceptance							P-6			
P-7: Reconcile input and output batch totals						P-7	P-7	P-7		
P-8: Procedures for rejected inputs							P-8			
Missing Controls										
M-1: Confirm customer accounts regularly		M-1				M-1		M-1		
M-2: Computer agreement of batch totals				M-2		M-2	M-2	M-2		

Possible effectiveness goals include the following:

A = Bill customers promptly upon evidence of shipment.

B = Provide for query and reporting functions that support accountability and meet specific problem-solving requirements (e.g., accounts receivable listings by invoice due date, aging reports).

C = Comply with the fair pricing requirements of the Robinson-Patman Act.

IV = Input validity

IC = Input completeness

IA = Input accuracy

UC = Update completeness

UA = Update accuracy

See Exhibit 11.1 (page 399) for a complete explanation of control plans and cell entries.

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The *information process control goals* comprise the second category of control goals in Figure 11.12 (pg. 397). To focus our discussion, we have limited our coverage of process inputs to just the shipping notice (i.e., the shipments not yet billed) and have not included other process inputs, such as customer inquiries regarding accounts balances and management inquiries. The information process control goals are the following:

- *Input validity (IV):* Valid shipping notice inputs are those that are properly authorized and reflect actual credit sales; for example, a shipping notice should be supported by a sales order and a real shipment, and the invoice should be prepared using authorized prices, terms, freight, and discounts. If a billing process is completed without a real shipment (a genuine sale), revenues will be overstated
- *Input completeness (IC) of shipping notices:* Failure to achieve this goal may result in billings not being completed, which leads to lost opportunity to obtain reimbursement for the sale and understated revenue.
- *Input accuracy (IA) of shipping notices:* Inaccurate billings will cause errors in the customers' accounts and the GL accounts for revenue and accounts receivable.
- *Update completeness (UC) and update accuracy (UA) of the sales order and accounts receivable master data:*[14] The accounts receivable master data is updated to create a record of the open invoice, and the sales order master data is updated to reflect that the shipment has been billed. This will preclude duplicate (i.e., invalid) invoices.

Recommended Control Plans

Recall that application control plans include both those that are characteristic of a particular AIS business process and those that relate to the technology used to implement the application. Many of the plans listed in Figure 11.12 (pg. 397) and Exhibit 11.1 (pg. 399) were discussed in Chapter 9, including an explanation of how each plan helps to attain specific control goals. That discussion will not need repeating here except to point out, as necessary, how and where the plan is implemented in the billing process pictured in Figure 11.11 (pg. 395). If you cannot explain in your own words the relationship between the plans and goals, you should review the explanations in Chapter 9.[15]

There are a few new plans that are particular to the billing business process. We first define and explain these controls and then summarize, in Exhibit 11.1, each cell entry in Figure 11.12, the control matrix:

- *Review shipped not billed sales orders (tickler file)* (see Exhibit 11.1 and Figure 11.12, P-1): By monitoring the sales orders that have been shipped but not yet billed, we can ensure that all shipping notices are billed in a timely manner.
- *Compare shipping notice input to sales order master data* (see Exhibit 11.1 and Figure 11.12, P-2): This is an example of *compare input data to master data* that ensures that the invoice, and accounts receivable and revenue, accurately reflect the items and quantities ordered by, and shipped to, the customer.
- **Independent billing authorization** (see Exhibit 11.1 and Figure 11.12, P-3): This establishes, for the billing personnel, that the shipment is supported by an actual sales order. Typically, this would be accomplished by sending a copy of the sales order from customer service directly to the billing department or by giving the billing personnel access to open sales order records on the sales order master data

14 These update goals will not apply in this analysis because the updates are simultaneous with the inputs and the input controls will address any update completeness and update accuracy issues.

15 Other controls from Chapter 9 that we could have analyzed here include preformatted screens, online prompting, programmed edits, and exception and summary reports.

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EXHIBIT 11.1 Explanation of Cell Entries for the Control Matrix in Figure 11.12

P-1: *Review shipped not billed sales orders (tickler file).*

- *Effectiveness goal A, shipping notice input completeness:* By monitoring the sales orders that have been shipped but not yet billed, we can ensure that *all* shipping notices are billed in a *timely* manner.

P-2: *Compare the input shipping notice to the sales order master data.*

- *Shipping notice input validity and input accuracy:* This comparison can ensure that there exists a sales order corresponding to the shipping notice (validity) and that the items and quantities shipped, and for which an invoice will be prepared, are the same as the items and quantities on the sales order.

P-3: *Independent billing authorization.*

- *Shipping notice input validity:* Comparison of sales orders, entered by a sales representative, with shipping notifications entered by shipping, verifies that each shipment is supported by an approved sales order.

P-4: *Check for authorized prices, terms, freight, and discounts.*

- *Shipping notice input validity and input accuracy:* We see prices, terms, freight, and discounts being calculated during the billing process using *authorized* data in the enterprise database. This will ensure that the invoices will be accurate as to these elements and will reflect criteria approved by management (validity).

P-5: *Independent pricing data.*

- *Effectiveness goal C:* The independent pricing of orders, using prices approved by management, helps to ensure that the company does not engage in discriminatory pricing practices in violation of the Robinson-Patman Act.
- *Shipping notice input validity:* Automatic pricing presumes that previously authorized prices are used in the billing process.

P-6: *Confirm input acceptance.*

- *Shipping notice input completeness:* By advising the billing clerk that input has been accepted, we can ensure input completeness.

P-7: *Reconcile input and output batch totals.*

- *Shipping notice input validity, input completeness, and input accuracy:* The billing clerk reconciles the input batch totals to the totals produced by the computer after the updates have occurred. If we assume that the batch total is either a dollar total or hash total, we are justified in making cell entries in all three columns: *input validity* (only legitimate shipments were submitted to the billing process), *input completeness* (all shipments were submitted to the billing process), and *input accuracy* (the invoices and updates to accounts receivable and revenue correctly reflect the items and quantities that were shipped). Item or line counts would ensure IC and IA but *not* IV, whereas document or record counts would ensure IC only.

P-8: *Procedures for rejected inputs.*

- *Shipping notice input completeness:* We presume that corrective action will be taken to investigate all rejected items, remedy any errors, and resubmit the corrected input for reprocessing.

M-1: *Confirm customer accounts regularly.*
Note: Most organizations send statements, but that process is beyond the scope of that depicted in Figure 11.11 (pg. 395) and so we have marked this as missing.

- *Effectiveness goal B:* The customer statements, and summary reports produced with them, would provide the reporting and accountability functions suggested by goal B.
- *Shipping notice input validity and input accuracy:* The customer can be utilized as a means of controlling the billing process. By sending regular customer statements, we use the customer to check that invoices were valid and accurate.

M-2: *Computer agreement of batch totals.*

- *Efficient employment of resources:* Computer agreement of batch controls would improve efficiency through automation of the process.
- *Shipping notice input validity, input completeness, and input accuracy:* This control does not appear in the flowchart nor is it mentioned in the physical process description narrative. Therefore we cannot make any of the P (present) entries made for control plan P-7.

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(i.e., the sales order data used in control P-2). Without this control, billing inputs might be for shipments never requested by a customer. This control assumes a segregation of duties among sales (customer service), shipping, and billing.

- **Check for authorized process, terms, freight, and discounts** (see Exhibit 11.1 and Figure 11.12, P-4): This ensures that invoices, accounts receivable, and revenue reflect prices, terms, freight, and discounts authorized by management. Profitability may be affected by failure to employ these authorized data.
- **Independent pricing data** (see Exhibit 11.1 and Figure 11.12, P-5): This assumes that there is a segregation of duties between those who approve unit prices and those involved in the selling function, such as customer sales representatives and billing clerks. Typically, selling prices will be obtained from inventory master data, a source for those prices that is *independent* of those in the selling functions.
- **Confirm customer accounts regularly** (see Exhibit 11.1 and Figure 11.12, M-1): The customer can be utilized as a means of controlling the billing process; the customer can review the report of open invoices to determine that they are valid and accurate.

Exhibit 11.1 (pg. 399) contains a discussion of each recommended control plan listed in the control matrix in Figure 11.12 (pg. 397), including an explanation of how each plan meets the related control goals. As you study the control plans, be sure to see where they are located on the systems flowchart. Also, see whether you agree with (and understand) the relationship between each plan and the goal(s) that it addresses. Remember that your ability to *explain* the relationships between plans and goals is more important than your memorization of the cell entries themselves.

Physical Process Description of the Cash Receipts Function

ENTERPRISE SYSTEMS

Figure 11.13 presents a physical process for the cash receipts function. From earlier in this chapter, you should have a good understanding of the billing function leading up to processing cash receipts. Take some time now to review the flowchart for general ideas. You should notice a close resemblance between this process's physical features and the logical design of the billing process as presented in Figures 11.2 (pg. 383), 11.3 (pg. 384), and 11.8 (pg. 390). You should also see that this system demonstrates the use of an *enterprise system* and several features of the technology discussed earlier in this chapter.

E-BUSINESS

As discussed earlier, the procedures employed in collecting cash can vary widely. For example, some companies ask customers to mail checks along with RAs to the company, others ask customers to send payments to a designated bank *lockbox*, whereas in e-commerce environments, some form of electronic funds transfer is generally used. Figure 11.13 depicts a process where customer payments are received by mail. The source documents include checks and RAs.

Each day, the process begins with mailroom clerks opening the mail. Immediately, the clerks endorse all checks. They assemble RAs (RAs) (stubs from the customer invoice—i.e., *turnaround documents*) in batches and prepare batch totals. The cash receipts data—batch total and remittance details—are then entered into the computer system via a scanning process and OCR. The computer edits the data as the data are entered and computes batch totals. The batched RAs are sent to the accounts receivable department for filing, and the checks are transferred to the cashier. The editing process verifies the correctness of the entered data, including customer number and so forth. By matching the input cash receipts data to the open invoice data that reside on the accounts receivable master data in the enterprise database, the process also verifies that

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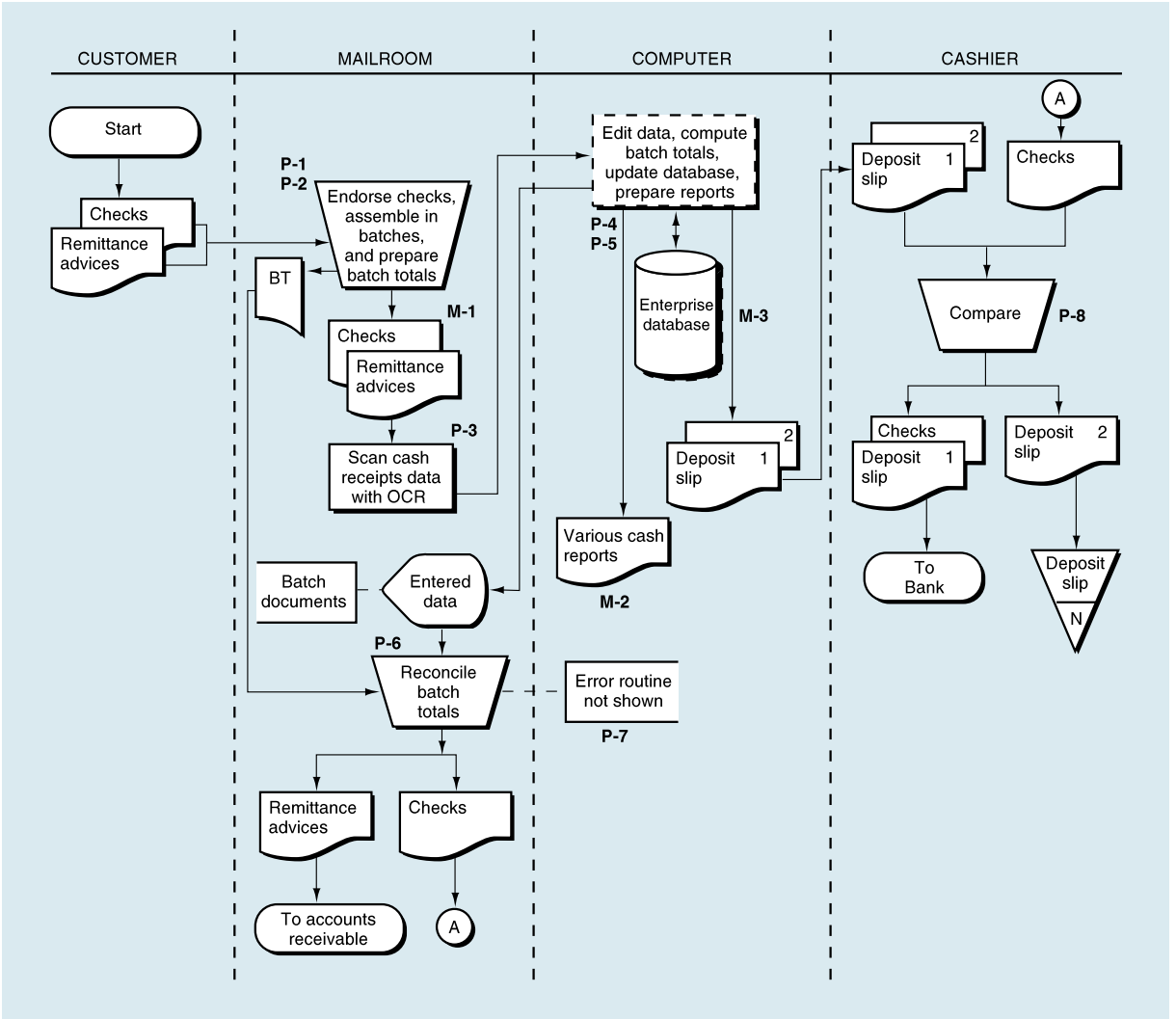
FIGURE 11.13 Systems Flowchart of the Cash Receipts Business Process



the customer account number, invoice number, and amount due are correct and that any cash discounts taken by the customer are legitimate (i.e., they have been *authorized*). After the data have passed all the control checks, the cash receipts event data, accounts receivable master data, and general ledger data are updated in the enterprise database. Also, the computer generates various cash reports and prepares the deposit slip. The deposit slip is transferred to the cashier. The cashier compares the checks and the deposit slip; if they agree, all documents are sent to the bank.

Application of the Control Framework for the Cash Receipts Function

CONTROLS

In this section, the control framework is applied to the cash receipts function. Figure 11.14 (pg. 402) presents a completed *control matrix* for the annotated systems flowchart depicted in Figure 11.13. Figure 11.13 is annotated to show the location of the control plans keyed to the control matrix.

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FIGURE 11.14 Control Matrix for the Cash Receipts Function

	Control Goals of the Cash Receipts Business Process									
	Control Goals of the Operations Process					Control Goals of the Information Process				
Recommended Control Plans	Ensure effectiveness of operations			Ensure efficient employment of resources (people, computers)	Ensure security of resources (cash, accounts receivable master data)	For remittance advice inputs (i.e., cash receipts), ensure:			For the accounts receivable master data, ensure:	
	A	B	C			IV	IC	IA	UC	UA
Present Controls										
P-1: Immediately endorse incoming checks					P-1					
P-2: Turnaround documents				P-2				P-2		
P-3: Enter cash receipts close to where cash is received				P-3				P-3		
P-4: Edit cash receipts for accuracy				P-4				P-4		
P-5: Compare input data with master data	P-5			P-5		P-5		P-5		
P-6: Manual agreement of batch totals						P-6	P-6	P-6		
P-7: Procedures for rejected inputs							P-7			
P-8: One-for-one checking of deposit slip and checks						P-8	P-8	P-8		
Missing Controls										
M-1: Immediately separate checks and remittance advices	M-1	M-1	M-1		M-1					
M-2: Reconcile bank account regularly						M-2		M-2		
M-3: Monitor open accounts receivable	M-3	M-3	M-3			M-3	M-3	M-3		

Possible effectiveness goals include the following:

A = Optimize cash flow by minimizing overdue accounts and reducing the investment in accounts receivable.

B = Provide for query and reporting functions that support accountability and meet specific problem-solving requirements (e.g., accounts receivable listings by invoice due date, cash on deposit by bank).

C = Comply with compensating balance agreements with our depository bank.

IV = Input validity

IC = Input completeness

IA = Input accuracy

UC = Update completeness

UA = Update accuracy

See Exhibit 11.2 (pages 405–406) for a complete explanation of control plans and cell entries.

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Control Goals

The control goals listed across the top of the matrix are similar to those presented in Chapters 7, 9, and 10, and Figure 11.12 (pg. 397) except that they have been tailored to the specifics of the cash receipts process.

The *operations process control goals* that are typical of the cash receipts process are the following:

- *Effectiveness of operations:* Goals A through C in Figure 11.14 identify three representative *effectiveness goals* for the cash receipts process. Goals A and B address the issues related to cash flow and management of customer accounts discussed earlier in the chapter. In addition, as mentioned in Chapters 7 and 9, the control matrices in this text incorporate as one of the effectiveness goals, when applicable, the COSO report's goal of complying with laws, regulations, and contractual agreements. We assume that the company whose process appears in Figure 11.13 (pg. 401) has loan agreements with its bank that require it to maintain certain minimum cash balances—known as compensating balances—on deposit. For that reason, effectiveness goal C—"Comply with compensating balance agreements with our depository bank"—appears in Figure 11.14.
- *Efficient employment of resources:* As noted in Chapter 9, reinforced in Chapter 10, and for the billing process earlier in this chapter, people and computers are the resources found in most business processes.
- *Resource security:* As mentioned in Chapter 9, the resource security column should identify assets that are at risk. The resources of interest here are cash and the accounts receivable master data. Controls should prevent the loss of cash and the unauthorized accessing, copying, changing, selling, or destruction of the accounts receivable master data.

The *information process control goals* comprise the second category of control goals in Figure 11.14 (pg. 401). To focus our discussion, we have limited our coverage of process inputs to just the RAs (i.e., the cash receipts) and have not included other process inputs, such as customer inquiries regarding accounts balances and management inquiries. The information process control goals are the following:

- *Input validity (IV):* Valid RA inputs (i.e., cash receipts) as those that represent funds *actually received* and for which cash discounts have been *authorized* and *approved*. If a cash receipts process is completed without actual funds, assets will be misstated (AR too low and cash too high).
- *Input completeness (IC) of RAs:* Failure to achieve this goal may result in loss of accountability for the cash and customer balances that do not reflect payments made.
- *Input accuracy (IA) of RAs:* Inaccurate cash receipts processing will cause errors in the customer accounts and in the GL accounts for accounts receivable and cash.
- *Update completeness (UC) and update accuracy (UA) of the accounts receivable master data:*[16] The accounts receivable master data is updated to reflect that the customer has made a payment.

16 These update goals will not apply in this analysis because the updates are simultaneous with the inputs and the input controls will address any update completeness and update accuracy issues.

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EXHIBIT 11.2 Explanation of Cell Entries for the Control Matrix in Figure 11.14

P-1: *Immediately endorse incoming checks.*

- *Security of resources:* The checks are restrictively endorsed to protect them from being fraudulently appropriated.

P-2: *Turnaround documents.*

- *Efficient employment of resources:* The use of the stub from the customer invoice as a turnaround document reduces the data entry that must be completed.
- *Remittance advice input accuracy:* Scanning the computer-readable turnaround document reduces the risk of data entry errors, thereby improving accuracy.

P-3: *Enter cash receipts close to where cash is received.*

- *Efficient employment of resources:* The direct entry of cash receipts data by mailroom personnel provides for a more efficient employment of resources because this arrangement eliminates the costs associated with the handling of the cash receipts data by additional entities.
- *Remittance advice input accuracy:* Because mailroom personnel would have both the check and the RA, they would be in a position to correct many input errors "on the spot," thereby improving input accuracy.

P-4: *Edit cash receipts for accuracy.*

- *Efficient employment of resources:* Programmed edits provide quick, low-cost editing of data.
- *Remittance advice input accuracy:* By identifying erroneous or suspect data and preventing these data from entering the system, programmed edit checks help to ensure input accuracy.

P-5: *Compare input data with master data.*

- *Effectiveness goal A, Efficient employment of resources:* Cash receipts data can be entered more quickly and at a lower cost if errors are detected and prevented from entering the system.
- *Remittance advice input validity:* The matching process verifies that any cash discounts deducted by customers have been *authorized.*
- *Remittance advice input accuracy:* Comparison to the accounts receivable master data should reduce input errors.

P-6: *Manual agreement of batch totals.*

- *Remittance advice input validity, input completeness,* and *input accuracy:* The mailroom clerk reconciles the input batch totals to the totals produced by the computer after the data have been accepted for input. If we assume that the batch total is either a dollar total or hash total, we are justified in making cell entries in all three columns: *input validity* (only real cash receipts were submitted to the cash receipts process), *input completeness* (all cash receipts were submitted to the cash receipts process), and *input accuracy* (the recording of cash receipts and updates to accounts receivable and cash correctly reflect the payments that were received). Item or line counts would ensure IC and IA but *not* IV, while document or record counts would ensure IC only.

P-7: *Procedures for rejected inputs.*

- *Remittance advice input completeness:* We presume that corrective action will be taken to

Recommended Control Plans

Recall that application control plans include both those that are characteristic of a particular AIS business process and those that relate to the technology used to implement the application. Many of the plans listed in Figure 11.14 (pg. 402) and Exhibit 11.2 were discussed in Chapter 9, including an explanation of how each plan helps to attain specific control goals. That discussion will not need repeating here except to point out, as necessary, how and where the plan is implemented in the cash receipts process pictured in Figure 11.13 (pg. 401). If you cannot explain in your own

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EXHIBIT 11.2 Explanation of Cell Entries for the Control Matrix in Figure 11.14 (continued)

investigate all rejected items, remedy any errors, and resubmit the corrected input for reprocessing.

P-8: *One-for-one checking of deposit slip and checks.*

- *Remittance advice input validity:* This plan helps to ensure input validity because each recorded receipt reflected on the deposit slip is represented by funds actually received (i.e., an actual customer check).
- *Remittance advice input completeness:* The cashier should monitor the temporary file of checks to ensure that a deposit slip is received for *all* cash receipts. Since the deposit slip is prepared from the cash receipts data, this plan helps to ensure the completeness of cash receipts inputs.
- *Remittance advice input accuracy:* Since the cashier compares the details of the deposit slip to the checks themselves, the accuracy of RA inputs is ensured.

M-1: *Immediately separate checks and remittance advices.*

- *Effectiveness goals A, B, and C:* The checks should be separated from the RAs and the checks deposited as quickly as possible. This helps to optimize cash flow and to ensure that the organization complies with compensating balance requirements of loan agreements with its bank. If the RAs were immediately separated from the checks, the process of *recording* the RAs also could be accelerated in that the customer payment could be recorded at the same time that the deposit is being prepared. Faster recording of the RAs (i.e., updating customer balances more quickly) would help to minimize overdue accounts and reduce the investment in accounts receivable. Furthermore, since the information available from the system would be more up to date, this plan also would address the providing of more meaningful query and reporting functions.
- *Security of resources:* The faster the checks are deposited, the less chance that the cash can be diverted. Also, by separating the check and RA we can reduce opportunities for lapping.

M-2: *Reconcile bank account regularly.*

- *Remittance advice input validity, Remittance advice input accuracy:* By comparing the bank statement and *validated* deposit slips to the cash receipts event data we can ensure that cash deposits were genuine and correctly recorded

M-3: *Monitor open accounts receivable.*
Note: Most organizations regularly review aging reports, but that process is beyond the scope of that depicted in Figure 11.13 (pg. 401) and so we have marked this as missing.

- *Effectiveness goals A, B, and C:* By following up on open accounts receivable we can optimize cash flows, solve billing and cash receipts processing problems, and ensure that the organization complies with compensating balance requirements of loan agreements with its bank.
- *Remittance advice input validity, input completeness,* and *input accuracy:* By following up on open accounts receivable we can detect and correct any errors that may have previously been made in the billing and cash receipts processes.

words the relationship between the plans and goals, you should review the explanations in Chapter 9.

There are a few new plans that are particular to the cash receipts business process. We first define and explain these controls and then summarize, in Exhibit 11.2, each cell entry in Figure 11.14, the control matrix:

- **Immediately endorse incoming checks** (see Exhibit 11.2 and Figure 11.14, P-1): To protect the checks from being fraudulently appropriated, the checks should be restrictively endorsed as soon as possible following their receipt in the organization.

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The endorsement should indicate that the check is for deposit only, the name of the organization depositing the check, and the account number and bank to which the check is being deposited. *Lockboxes* provide even more protection for the cash by having cash receipts sent directly to a bank.

- **Immediately separate checks and remittance advices** (see in Exhibit 11.2 and Figure 11.14, M-1): If the RAs are immediately separated from the checks, the deposit and the process of recording the RAs can be accelerated because the customer payment could be recorded at the same time that the deposit is being prepared. The faster the checks are deposited, the less chance that the cash can be diverted. And, if the person posting the RA does not have the check, *lapping* can be prevented.
- **Reconcile bank account regularly to confirm the validity and accuracy of the recorded cash receipts** (see Exhibit 11.2 and Figure 11.14, M-2): The bank statement and *validated* deposit slips will reflect actual cash deposits and the correct amount of those deposits. These should be reconciled to the cash receipts event data to ensure that all valid deposits were recorded correctly. Ideally, a person who is independent of those who handle and record cash receipts and disbursements should perform the reconciliation.
- **Monitor open accounts receivable** (see Exhibit 11.2 and Figure 11.14, M-3): An organization should regularly review accounts receivable aging reports (see Figure 11.7 on pg. 389) to ensure that cash is received in a timely manner. Follow-up procedures should be undertaken for payments that are overdue, and those that are deemed uncollectible should be written off to ensure that accounts receivable balances are not overstated. Errors in accounts receivable discovered during this follow up should be corrected immediately.

Each of the recommended control plans listed in the matrix in Figure 11.14 (pg. 402) is discussed in Exhibit 11.2. We have intentionally limited the number of plans to avoid redundancy. For instance, we do not include the plan "Computer agreement of batch totals," which is missing from the process. Further, we make no reference to performing *sequence checks* because the turnaround RAs are not received in sequence, and, therefore, sequence checks are not relevant to the process under review. In addition to the control plans discussed in Exhibit 11.2, an organization should *reconcile subsidiary ledgers and control accounts regularly*. This control plan is discussed in Chapter 16. Also, you should note that the control plan *confirm customer accounts regularly*, discussed earlier under the control plans for the billing process, serves to check the validity and accuracy of *both* customer billings and cash receipts.

Summary

With the conclusion of this chapter, we complete the second business process in the order-to-cash process depicted in Figure 2.7 (pg. 53). In later chapters, we discuss the interaction of the OE/S and B/AR/CR processes with the other key business processes in an organization.

As we did at the end of Chapter 10, we include here, in Technology Summary 11.4, a review of the company-level controls (i.e., control environment, pervasive controls, and general/IT general controls) that may have an impact on the effectiveness of the B/AR/CR business process controls.

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Technology Summary 11.4

CONSIDERING THE AFFECT OF COMPANY-LEVEL CONTROLS ON B/AR/CR BUSINESS PROCESS CONTROLS

The effectiveness of B/AR/CR controls can depend on the operation of several controls described in Chapter 8. In this summary we examine some of those relationships.

Segregation of Duties

There are several functions in the B/AR/CR process that must be segregated for the business process controls to be effective, including the following:

- Authorization for item pricing, as well as payment terms, freight, and discounts, should be assigned to someone other than those completing the billing process. For example, prices on the inventory master records might be maintained by marketing.
- The billing process assumes that there has been an authorized sales order and an actual shipment. This presumes the segregation among sales, shipping, and billing functions.
- Because the cash receipts process handles cash, there should be a segregation of duties between the cashier (treasurer) and cash applications/accounts receivable (controller) to ensure that the cash is not diverted with such techniques as *lapping*.
- The reconciliation of the bank accounts is a key control over the cash receipts process and this must be performed by someone other than those that handle cash receipts (and disbursements). Otherwise, thefts undertaken during cash processing can be hidden.

Additional Manual Controls

There are several manual, pervasive, and general controls that can affect the performance of the business process controls:

- An additional control over the cash receipts process is to have two employees present when mail containing cash is opened. This will preclude theft by either employee, unless they collude to steal the funds.
- In addition to separating the cashier and cash applications functions, *lapping* can be discouraged by *forced vacations* and *rotation of duties* for those handling cash receipts.
- As noted in Technology Summary 9.1 (pg. 303), the performance of these manual controls depend on the quality of the people performing the control activities. Therefore, we expect controls such as *selection and hiring, training and education, job descriptions*, and *supervision* to be in place.

Automated Controls

All of the B/AR/CR controls performed by the computer depend on the general controls (also known as IT general controls or ITGCs) in Chapter 8. Those controls include *check for authorized prices, terms, freight, and discounts*, *compare inputs with master data* (e.g., compare input shipping notices to sales orders, and compare input RAs to open invoices), and *programmed edits.* We need to know that the programs will perform the controls as designed (e.g., *program change controls*). Also, we need to know that the stored data used by the computer when executing these controls is valid and accurate (e.g., physical and logical access controls). For the B/AR/CR process we are particularly concerned, for example, with controlled access to:

- Prices so that they cannot be changed without authorization
- AR master data so that an open invoice cannot be deleted without a payment having been received
- Sales order master data so that bogus sales orders cannot be created and that they cannot be changed to falsely indicate that an invoice has been sent.

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Key Terms

billing/accounts receivable/cash receipts (B/AR/CR) process
float
good funds
charge card
credit card
debit card
electronic funds transfer (EFT)
automated clearing house (ACH)
lockbox
electronic bill presentment and payment (EBPP)
lapping
invoice
remittance advice (RA)
accounts receivable master data
balance-forward system
open-item system
sales event data
accounts receivable adjustments data
cash receipts event data
remittance advice file
post-billing system
pre-billing system
independent billing authorization
check for authorized prices, terms, freight and discounts
independent pricing data
confirm customer accounts regularly
immediately endorse incoming checks
immediately separate checks and remittances advices
reconcile bank accounts regularly

Review Questions

RQ 11-1 What is the billing/accounts receivable/cash receipts (B/AR/CR) process?

RQ 11-2 What primary functions does the B/AR/CR process perform? Explain each function.

RQ 11-3 With what internal and external entities does the B/AR/CR interact?

RQ 11-4 What functions are typically segregated in the B/AR/CR process?

RQ 11-5 What are Electronic Bill Presentment and Payment (EBPP) systems? How do they reduce costs and accelerate cash flows?

RQ 11-6 Describe several ways that companies have reduced the *float* connected with cash receipts.

RQ 11-7 What is lapping? What controls can prevent or detect lapping?

RQ 11-8 What is an invoice?

RQ 11-9 What is a remittance advice (RA)?

RQ 11-10 What is accounts receivable master data?

RQ 11-11 What are the major features of a balance-forward and an open-item accounts receivable system?

RQ 11-12 What are the differences between a post-billing system and a pre-billing system?

RQ 11-13 What characterizes a valid shipping notice and invoice?

RQ 11-14 What are the key controls associated with the billing business process? Explain each control.

RQ 11-15 What characterizes a valid RA (i.e., cash receipt)?

RQ 11-16 What are the key controls associated with the cash receipts business process? Explain each control.

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RQ 11-17 Describe the impact that company-level controls (i.e., control environment pervasive controls, general/IT general controls) can have on the B/AR/CR business process controls.

Discussion Questions

DQ 11-1 Develop several examples of possible goal conflicts among the various managers and supervisors depicted in Figure 11.1 (pg. 377).

DQ 11-2 Based on the definition of *float* presented in the chapter, discuss several possibilities for improving the cash float for your company, assuming you are the cashier.

DQ 11-3 Using Figure 11.6 (pg. 387), speculate about the kinds of data that might be running along the data flow that comes from the accounts receivable master data to bubble 2.1. Be specific, and be prepared to defend your answer by discussing the use(s) to which *each* of those data elements could be put.

DQ 11-4 Discuss the information content of Figure 11.7 (pg. 389). How might this report be used by the credit manager or by the accounts receivable manager? If you were either of these managers, what other reports concerning accounts receivable might you find useful, and how would you use them? Be specific.

DQ 11-5 Consult the systems flowcharts of Figures 11.11 and 11.13 (pgs. 395 and 401). Discuss how each of these processes implements the concept of segregation of duties discussed in Chapter 8. For each of the two processes, be specific as to which entity (or entities) performs each of the four data processing functions mentioned in Chapter 8 (assuming that all four functions are illustrated by the process).

DQ 11-6 Discuss the relative advantages of Electronic Bill Presentment and Payment (EBPP) systems, a lockbox, charge cards, and debit cards from the standpoint of *both* the party making the payment and the party receiving the payment.

DQ 11-7 a. Discuss the conditions under which each of the following billing systems are most appropriate: (1) pre-billing system and (2) post-billing system.

b. Discuss the relative advantages of each of the billing systems mentioned in part a, from the standpoint of both the selling company and the customer.

DQ 11-8 The following process is used by the Otis Company to process cash receipts. Discuss the positive and negative elements of this process. Include operational, information, and control issues. What additions or other changes to the process do you recommend?

Mail for Otis Company is delivered to Sally the company receptionist. Sally opens the mail and prepares a daily log of checks received. She sends the RAs to Al, the accounts receivable clerk, and the checks to Tony, the treasurer. Sally files the check log by date. Tony the treasurer prepares a deposit slip in duplicate and endorses the checks. Tony then takes the deposit slip to the bank and files the duplicate slip by date. Al uses the RAs to update the customer accounts to reflect the payment.

Problems

Note: As mentioned in Chapter 10, the first few problems in the business process chapters are based on processes of specific companies. Therefore, the problem material starts with narrative descriptions of those processes (cases).

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CASE STUDIES

CASE A: Stockbridge Company (billing and cash receipts processes)

The Stockbridge Company sells medical supplies to hospitals, clinics, and doctor's offices. Stockbridge uses an ERP system for all of its business processes.

The billing process begins each morning when a clerk in the billing section of the accounts receivable department requests that the ERP system display the billing due list on their computer screen. These are the shipments made the previous day from the warehouse at Stockbridge's customer fulfillment center. At the bottom of the list the computer displays the total number of records in the billing due list, the total number of items that were shipped, and a hash total of the customer numbers. The clerk records these onto a batch total sheet.

The clerk then requests that the ERP system execute the billing program. This program prepares invoice records by accessing the customer data to get the routing information for the electronic invoice and the payment terms to be given to the customer. The program also obtains the prices from the inventory data. Finally, the program examines the sales order data to determine how the shipment was routed so that shipping costs can be added to the invoice. At the end of this process the computer calculates and displays a total of the number of invoices, the total items being billed, and a hash total of the customer numbers in the batch of invoices.

The billing clerk reconciles the invoice totals with those obtained from the billing due list. If the totals agree, the clerk accepts the batch of invoices. In response the ERP system updates the sales order to show that the shipment has been billed, closes the billing due list, creates an accounts receivable record, updates the general ledger for the sale, sends an electronic invoice to the customer, and displays a job completed notice on the billing clerks screen.

The cash receipts process begins each morning when the lockbox at Stockbridge's bank sends a file of remittance data processed the previous day. Stockbridge's ERP system automatically saves this file. For each payment this file contains a customer number, invoice number, and amount paid. Totals in this file include hash totals for customer number and invoice number and the total payments. The bank also sends an e-mail containing these same totals. A clerk in the cash applications section of the accounts receivable department requests that the ERP system display the totals in the remittance file and manually compares those totals to those in the e-mail.

If the totals agree, the clerk requests that the ERP system apply the payments to the accounts receivable data. The computer examines the terms on the invoice record, calculates the amount that should be paid, and records the payment (again, assuming that the amounts are all correct). The computer displays the totals recorded to accounts receivable and discounts, and the total amount paid. The clerk compares these totals to those obtained from the e-mail and remittance file. If these agree, the clerk requests that the ERP system update the general ledger (cash, accounts receivable, discounts) for this batch.

CASE B: Trenton Novelties, Inc. (billing processes)

Trenton Novelties manufactures and sell novelty items to retail stores. Completed orders (goods and attached sales order) are received in the shipping department from the factory floor. The shipping clerk keys the sales order number into the computer in the shipping department. The computer accesses the sales order on the sales order master data and displays the open sales order.

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After determining that the correct sales order has been displayed, the shipping clerk keys in the items and quantities being shipped. The clerk reviews the shipment data and, if correct, accepts the input. (NOTE: The remainder of the shipment process is beyond the scope of this case narrative.)

Once the shipment data has been accepted, the computer updates the sales order master data to reflect the shipment, creates and records an invoice on the accounts receivable master data, and prints an invoice, in three parts, on the printer in the billing office. A billing clerk signs the invoice, mails copies one and two to the customer, and files copy three by customer name.

CASE C: Trenton Novelties, Inc. (cash receipts process)

Before starting this case, review the facts in Case B. Assume that customers have been billed and sent in a payment with copy three of the invoice on which they have filled in the amount remitted. The cash receipts clerk compares the check to the amount written on the invoice, and, in a space reserved, enters the amount received so that it can be computer scanned.

Checks and these invoice copies are batched. The invoice copies are sent to the IT department. The deposit slip prepared, in triplicate, and the checks are deposited. Copies of the batch totals and deposit slip copy 2 are filed separately by date. Copy three of the deposit slip is sent to the treasurer's office.

The IT department uses an optical scanner to process the invoice copies. This run occurs each evening at 10:00 P.M. Customers' accounts are posted, and a cash receipts listing is produced and sent to cash receipts each morning, where it is checked against and filed with the related batch totals. A copy of the cash receipts listing is sent to the treasurer's office.

P 11-1 For the case assigned by your instructor,[17] complete the following requirements:

a. Prepare a table of entities and activities.

b. Draw a context diagram.

c. Draw a physical data flow diagram (DFD).

d. Prepare an annotated table of entities and activities. Indicate on this table the groupings, bubble numbers, and bubble titles to be used in preparing a level 0 logical DFD.

e. Draw a level 0 logical DFD.

P 11-2 For the case assigned by your instructor, complete the following requirements:

a. Draw a systems flowchart.

b. Prepare a control matrix, including explanations of how each recommended existing control plan helps to accomplish—or would accomplish in the case of missing plans—each related control goal. Your choice of recommended control plans could come from Exhibit 11.1 and/or Exhibit 11.2 (pgs. 399 and 404–405) plus any other control plans from Chapters 9 or 10 that are germane to your company's process.

17 For problems P 11-1 and P 11-2, if the assigned case is an extension of an earlier case, limit your solution to the narrative contained in the assigned case.

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c. Annotate the flowchart prepared in part a to indicate the points where the control plans are being applied (codes P-1 . . . P-*n*) or the points where they could be applied but are not (codes M-1 . . . M-*n*).

P 11-3 Using the following table as a guide, describe for each function (see Figure 11.1, pg. 377):

a. A risk (an event or action that will cause the organization to fail to meet it goals/objectives).

b. A control/process or use of technology that will address the risk.

Function	Risks	Controls and Technology
Marketing Finance Billing AR (debit) Sales (credit) Collections Cash (debit) AR (credit)		

P 11-4 The following is a list of 12 control plans from Chapter 8.

Control Plans from Chapter 8

A. Segregate cash applications clerks from AR clerks who resolve customer complaints

B. Segregate cashier who processes cash receipts from the treasurer

C. Segregate controller functions (recordkeeping for AR) from treasurer functions (custody of cash)

D. Continuous data protection (CDP) to ensure availability of sales order and AR master data

E. Controls for physical and logical access to sales order master data to prevent, for example, unauthorized deletion of open sales orders

F. Controls for physical and logical access to accounts receivable master data to prevent, for example, unauthorized deletion of open invoices

G. Security module (i.e., assignment of access rights to employees)

H. Selection, hiring, and supervision of billing clerks to ensure that they can and do carry out their assigned responsibilities

I. Physical controls for perimeter, building, and computer facilities to prevent loss or destruction of the computer resources

J. Preventive maintenance of computer hardware to ensure reliability and availability

K. Systems development life cycle (SDLC), including testing and approval before implementation of new or revised programs

L. Segregate marketing (i.e., authorization of prices) from billing (i.e., authorization of changes to the billing process and programs)

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The following is a list of 10 B/AR/CR business process controls or deficiencies.

B/AR/CR business process control plans or deficiencies

1. Each day the computer reviews the open sales orders to identify those that have been shipped but not yet billed. This list is presented to the billing clerk for action. Occasionally the billing clerk does not bother to follow up on open sales orders and invoices are not sent out in a timely manner.
2. Periodically the billing program reviews open sales order (shipped not billed) and prepares and sends invoices. To prevent some invoices from being sent, someone in the organization has changed some sales orders to indicate that they are closed.
3. When an invoice is prepared the computer should employ authorized prices, terms, freight, and discounts. Customer complaints include incorrect prices on invoices. Research determines that billing clerks are changing prices prior to billing.
4. Prior to releasing a batch of invoices, the billing clerk agrees the batch totals of the shipments to be billed to the totals prepared by the computer at the end of the invoicing process. The computer totals are often incorrect.
5. Upon receipt in the mailroom, checks are forwarded to the cashier and RAs to the cash applications clerks.
6. The computer prepares an aging of open invoices and accounts receivable clerks follow-up on overdue balances.
7. Turnaround documents (e.g., RAs) are used to record customer payments. The scanner often does not read the remittance data correctly.
8. The treasurer reconciles bank accounts regularly.
9. Monthly statements are printed in the accounts receivable department and mailed to customers.
10. Cash receipts are edited to determine that the customer has taken the appropriate discounts. Exceptions are routed via *workflow* to the supervisor of AR for electronic approval. Sales clerks have been able to approve the taking of unauthorized discounts.

Match the 10 B/AR/CR business process control plans with a pervasive control plan from Chapter 8 that could prevent the deficiencies noted above or have an impact on the successful execution of the business process control. Explain the impact that the pervasive control could have.

P 11-5 (*Note:* You can do this problem only if you have access to a computer-based electronic spreadsheet, such as Excel, or to a database software package, such as Access.)

Problem Data

Gateway Industries is a retailer of bicycles and bicycle parts. It sells on credit terms of net 30 days. As of May 31, 20XX, its subsidiary ledger of customer balances reflects the following details:

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Customer Name	Invoice Number	Due Date	Invoice Amount	Total Balance
Bikes Et	1965	2/15/20XX	$1,427.86	
Cetera	2016	3/23	721.40	
	2092	4/16	713.49	
	2163	5/14	853.02	
	2184	5/30	562.92	
	2202	6/13	734.47	
	2235	6/20	622.88	$5,636.04
International	1993	3/15	$ 333.24	
Bicycle	2010	3/20	564.49	
Sales	2112	4/24	400.69	
	2170	5/16	363.60	
	2182	5/29	1,255.91	$2,917.93
Rodebyke	2075	4/10	$ 634.84	$3,050.76
Bicycles & Mopeds	2133	4/28	370.97	
	2159	5/7	371.49	
	2174	5/22	498.75	
	2197	6/8	713.54	
	2222	6/18	451.11	
Finance Charge		6/30	10.06	
Stan's	1974	2/27	$ 575.00	
Cyclery	2000	3/18	536.82	
	2019	3/25	641.60	
	2108	4/22	629.94	
	2125	4/26	682.50	
	2164	5/14	292.36	
	2215	6/16	249.04	$3,607.26
Wheelaway	2117	4/25	$ 819.55	$5,121.39
Cycle	2140	5/4	745.54	
Center	2171	5/16	490.00	
	2178	5/25	587.80	
	2192	6/3	1,045.23	
	2219	6/17	475.87	
	2234	6/20	257.37	
	2250	6/29	700.03	

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Using the computer electronic spreadsheet or database software indicated by your instructor, prepare an accounts receivable aging report as of May 31, 20XX. Observe the following specific requirements:

a. In addition to a report heading, the report should contain column headings for:
   - Customer name
   - Total balance
   - Current balance
   - Past-due balance, with supporting columns for 1 to 30 days, 31 to 60 days, 61 to 90 days, Over 90 days

b. Each individual open invoice and its due date should be entered into the computer software. However, those details should *not* appear in the report. Instead, for each customer, show the total outstanding balance and the total amount in each age category.

c. Print totals for each money column and verify that the totals of the aging columns cross-add to the grand total of all outstanding balances.

P 11-6 The following is a list of 12 control plans from this chapter or from Chapters 9 and 10.

Control Plans

A. Cumulative sequence check

B. Document design

C. Prenumbered shipping notifications

D. Procedures for rejected inputs

E. Turnaround documents

F. Deposit slip file

G. Independent billing authorization

H. Review shipped not billed sales orders

I. Compare input data with master data and invoice

J. Programmed edits of shipping notification

K. Confirm input acceptance

L. Computer agreement of batch totals

The following 10 statements describe either the achievement of a control goal (i.e., a system success) or a system deficiency (i.e., a system failure).

Control Goals or System Deficiencies

1. Helps to ensure the validity of shipping notifications.
2. Provides a detective control to help ensure the accuracy of billing process.
3. Provides a preventive control to help ensure the accuracy of billing process.
4. In an online environment, helps to ensure input completeness.
5. Helps to identify duplicate, missing, and out-of-range shipping notifications by comparing input numbers to a previously stored number range.

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6. The shipping clerk could not read the quantity picked that had been written on the picking ticket by the warehouse clerks.
7. In a periodic/batch environment, helps to ensure the information system control goal of input completeness of the shipping notices.
8. Helps to ensure that all shipments are billed in a timely manner.
9. Meets the operations system control goal of efficiency of resource use by reducing the number of data elements to be entered from source documents.
10. Provides an ''audit trail'' of deposits.

Match the 10 control goals or systems deficiencies with a control plan that would *best* achieved the desired goal or prevent the system deficiency. A letter may be used only once, with two letters left over.

P 11-7 The following is a list of 12 control plans from this chapter or from Chapters 9 and 10.

Control Plans

A. Key verification
B. Compare input sales return notification to AR master data
C. Immediately endorse incoming checks
D. One-for-one checking of checks and RAs
E. Immediately separate checks and RAs
F. Reconcile bank account regularly
G. Review shipped but not billed sales orders
H. Confirm customer balances regularly
I. Enter shipping notice close to location where order is shipped
J. Check for authorized prices, terms, freight, and discounts
K. Hash totals (e.g., of customer ID numbers)
L. Computer agreement of batch totals

The following are 10 system failures that have control implications.

System Failures

1. Once goods are delivered to the common carrier, the shipping department at Goodtimes Video Corp. prepares a three-part shipping notice. Copy 2 of the notice is sent to billing to initiate the billing process. Many shipping notices have either been lost in transit or have been delayed in reaching the billing section.
2. Rayburn Company was given a refund for a sales return even though the return was received and processed months after the sales terms allowed such a return.
3. Because the mailroom clerks at Laxx Company do not take batch totals of incoming customer checks, the cashier has misappropriated several thousand dollars over the years by depositing company checks to his personal bank account.

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4. Potpourri Merchandising Mart uses periodic processing for entering sales invoice inputs and updating customer accounts. Although it uses certain batch total procedures, Potpourri has experienced a number of instances of recording sales invoices to incorrect customer accounts.
5. Shickle Company customers send in their payments with an RA on which they write the amount being paid. These amounts often do not agree with the amount of the payment. As a result the cash and AR balances at Shickle are not correct.
6. The balances due from customers at Abraham Company are months overdue.
7. At Jonquil, Inc., shipping sends shipping notices to the data entry group in data processing where they are keyed. During the last month, an inexperienced data entry clerk made several errors in keying the shipping notices. The errors were discovered when customers complained about inaccurate invoices.
8. Sales at Darien Corporation have declined considerably compared to those of the preceding year. In an effort to improve the financial statements, the vice president of finance obtained a supply of blank shipping notices on which she fabricated 100 fictitious shipments. She submitted the fictitious documents to the billing department for billing.
9. The mailroom at Whipoorwill Co. forwards checks and RAs to the accounts receivable department. A clerk checks the RAs against open invoices, as reflected on the accounts receivable master data. It is not uncommon for the clerk to note discrepancies, in which case the customer is contacted in an effort to reconcile the differences. Once all the discrepancies have been investigated and cleared, the accounts receivable clerk releases the checks to the cashier for deposit.
10. Clerks in the billing department at Abacus Enterprises, Inc., prepare sales invoices from a copy of the packing slip received from the shipping department. Recently, the company has experienced a rash of customer complaints that the customers have been billed for freight charges, despite the fact that the freight terms were FOB destination.

Match the 10 system failures with a control plan that would *best* prevent the system failure from occurring. Also, give a brief (one- to two-sentence) explanation of your choice. A letter should be used only once, with two letters left over.

P 11-8 Conduct research on electronic bill presentment and payment (EBPP) systems (see Technology Summary 11.2, pg. 380). Write a paper describing the advantages and disadvantages, to both the payer and payee, of the two methods for implementing these systems, the biller direct and the consolidation/aggregation methods.

P 11-9 a. Redraw the appropriate part of Figure 11.3 (pg. 384), assuming a lockbox system is used. Also, prepare a lower-level data flow diagram for the cash receipts function, using the same assumption.

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b. Redraw the appropriate part of Figure 11.3 assuming that, in addition to cash collections from charge customers, the organization also has cash sales and receives cash from the sale of equity securities. Prepare a brief, one- to two-sentence defense for each of the changes made.

Do *not* draw an entirely new Figure 11.3 for either part a or part b. You might want to photocopy the figure from the chapter and then draw your additions and changes on the photocopy.

P 11-10 For Figure 11.3 (pg. 384):

a. Indicate the sequence of activities by putting numbers next to the data flows. For example, the ''Sales order notification'' in the upper left of the diagram would be number ''1.'' Restart the numbers for each bubble. Assign the same number to simultaneous data flows. For example, ''Invoice'' and ''GL invoice update'' coming out of bubble 1.0 should get the same number.

b. For each process bubble, indicate, by placing a ''T'' on the flow, the flow that triggers the processing activities.

c. Label each flow into and out of the data stores and to and from the other processes. These labels should describe the purpose of the flow.

d. Annotate each data store to indicate the data's major elements.

e. Include on the diagram one-sentence descriptions of each process bubble's activities.

P 11-11 Use the data flow diagrams in Figures 11.3, 11.4, 11.6, and 11.8 (pgs. 384, 385, 387, and 390) to solve this problem.

Prepare a 4-column table that summarizes the B/AR/CR process's processes, inputs, and outputs. In the first column, list the three processes shown in the level 0 diagram (Figure 11.3). In the second column, list the subsidiary functions shown in the three lower-level diagrams (Figures 11.4, 11.6, and 11.8). For *each* subsidiary function listed in column 2, list the data flow names or the data stores that are inputs to that process (column 3) or outputs of that process (column 4). (See *Note*.) The following table has been started for you to indicate the format for your solution.

Note: To simplify the solution, do *not* show any reject stubs in column 4.

Solution Format

Summary of the B/AR/CR processes, subsidiary functions, inputs, outputs, and data stores

Process	Subsidiary Functions	Inputs	Outputs
1.0 Perform billing	1.1 Compare	Sales order notification Shipping's billing notification	Validated shipping notification
	1.2 Prepare invoice	Validated shipping notification Customer master data	. . . Continue solution . . .