12 The "Purchase-to-Pay" (PtoP) Process

Kraft Foods, Inc., recently received an excellence award from Giga Information Group for its new automated Purchase-to-Pay Information System.[1] Kraft, similar to most organizations, was concerned over the cost and inefficiencies of processing purchases and related payments. One of the big efficiency problems arose whenever a purchase invoice was in question. An associate would have to search through mounds of paper to reconcile the invoice with old invoices, paid and unpaid. Application of a consistent set of controls over the process was difficult because of variations in purchase invoices and vendor requirements. Further complicating matters, another department had to calculate the related taxes manually by analyzing the invoice and identifying the most advantageous method.

Kraft's solution was to implement a new accounts payable system that used advanced workflow technologies to eliminate paper, cut unnecessary steps, and automatically route high-priority tasks to key employees. The workflow technologies automatically capture purchase invoice data and facilitate business process activities by electronic routing of invoices through the required approval procedures for signature validation, audit control, and tax compliance. The system also automatically arranges invoices according to due dates and allows Kraft to negotiate discounts with vendors based on payment date. The results include improved process control, reduction in invoice processing cost from an average of $7 to $4, and improved productivity of 30%.

In this chapter, we will explore the processes, systems, and controls that should be in place to ensure that the Purchase-to-Pay process operates efficiently and effectively. Additionally, we will examine specific control procedures that help ensure all payments are made in a timely fashion.

Synopsis

This chapter presents our second business process, Purchase-to-Pay (PtoP), also known as procurement. By now, you are familiar with the overall structure of these business process chapters, but note the sections on Managing the PtoP Process, Physical Process Description, and the Applications of the Control Framework to General Expenditures. These sections also cover material on current and evolving technologies.

[1] Barb Cole-Gomolski, "Oh I Wish I Had a Better Invoice System," *Computerworld* (May 18, 1998).

LEARNING OBJECTIVES

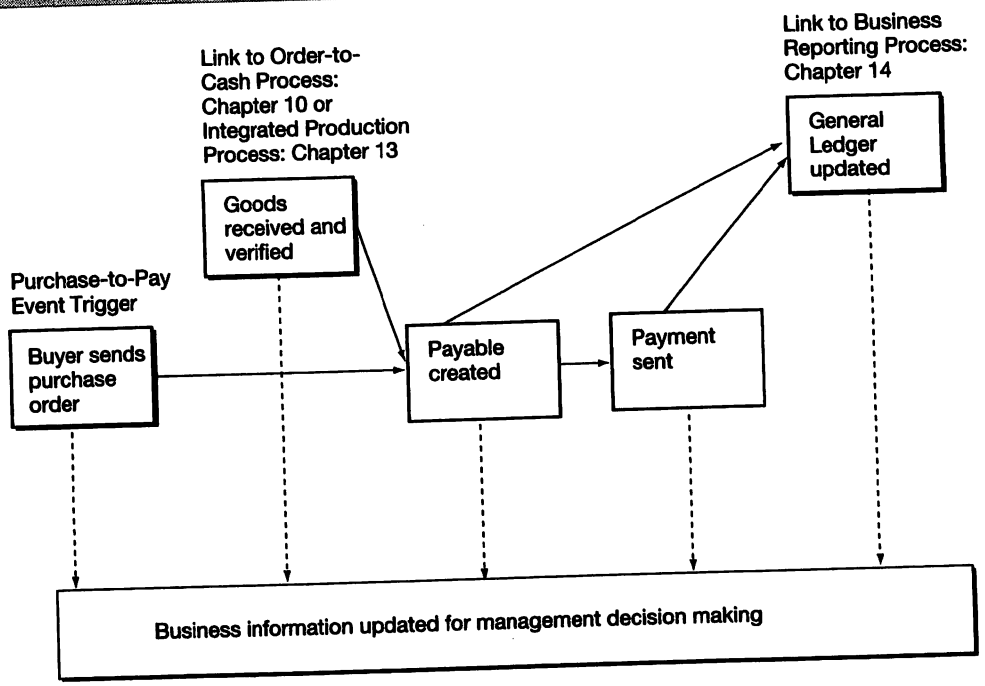
- To describe the business environment for the Purchase-to-Pay (PtoP) process
- To analyze the effect of enterprise systems and other technologies on the PtoP process
- To describe the PtoP process logic, physical characteristics, and support of management decision making
- To describe and analyze controls typically associated with the PtoP process

Introduction

We begin by reviewing how the PtoP process combines with other processes within a company. Figure 12.1 depicts the PtoP process.

Note that the PtoP process interacts with inventory (in the Order-to-Cash process) as the ordering, receipt of goods, and updating of inventory data takes place. The PtoP process also interacts with the general ledger (Chapter 14). We examine those relationships later in the chapter. Let's take a closer look at the PtoP process.

Figure 12.1 The Purchase-to-Pay Process



Process Definition and Functions

The Purchase-to-Pay process is an interacting structure of people, equipment, methods, and controls that is designed to accomplish the following primary functions:

Review Question

What primary functions does the PtoP process perform?

1. Handle the repetitive work routines of the purchasing department, the receiving department, the accounts payable department, the payroll department, and the cashier[2]
2. Support the decision needs of those who manage the departments listed in item 1
3. Assist in the preparation of internal and external reports

First, the PtoP process handles repetitive work routines by capturing and recording data related to the day-to-day operations of affected departments. The recorded data then may be used to generate source documents (such as purchase orders and receiving reports) and to produce internal and external reports.

The PtoP process prepares a number of reports that personnel at various levels of management use. For example, the manager of the purchasing department might use an open purchase order report to ascertain which orders have yet to be filled. The cash disbursements manager might use a cash requirements forecast to help her decide which invoice(s) to pay next.

Finally, the PtoP process assists in the preparation of external reports such as financial statements. The process supplies the general ledger with data concerning various events related to the procurement activities of an organization.

Review Question

How, in your own words, would you define the PtoP process?

Before leaving this section, we need to clarify two terms that we will be using throughout the chapter: *goods* and *services. Goods* are raw materials, merchandise, supplies, fixed assets (e.g., buildings, machinery), or intangible assets (e.g., patents, copyrights, franchises). *Services* are tasks performed by outside vendors, including contractors, catering firms, towel services, consultants, auditors, and the like. Employee activities feeding the payroll process are a specialized form of *services.*

Organizational Setting

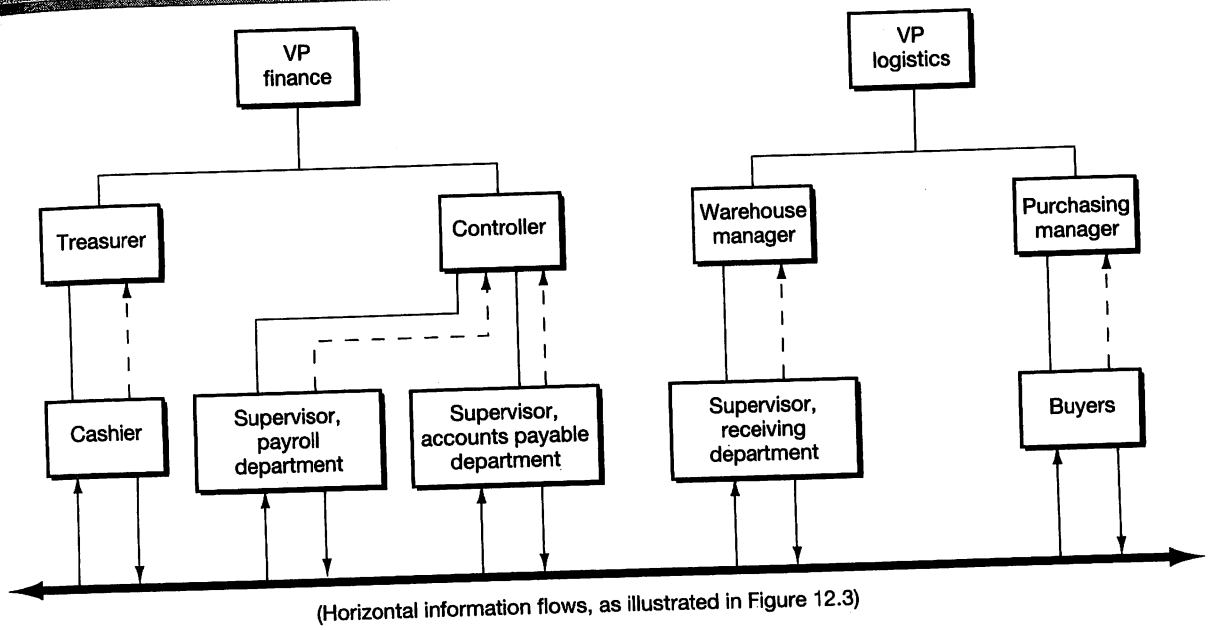
Figure 12.2 presents a generic organization chart for the PtoP process. You are already familiar with some of the roles shown in the figure. We will concentrate on the managers or the supervisors of the accounts payable, payroll receiving, and purchasing departments.

A Vertical Perspective

The *accounts payable department* is responsible for processing invoices received from vendors, preparing payment vouchers for disbursement of cash for goods or services

[2] To focus our discussion, we have assumed that these four departments are the primary operating units related to the PtoP process. For a given organization, however, the departments associated with the process may differ.

Figure 12.2 A Vertical Perspective of the PtoP Process



NOTES:

1. This figure represents a partial organization chart for the finance and logistics functions.
2. The broken lines represent vertical information flows (often in the form of management reports) based on data captured or generated by the P-to-P process.

Review Question

How does the PtoP process relate to its organizational environment?

received, and recording purchase and disbursement events. Responsibility for all cash disbursements lies with *accounts payable,* except payroll, which is handled separately by the *payroll department.*

The *receiving department* is responsible for receiving incoming goods, signing the bill of lading presented by the carrier or the supplier in connection with the shipment, reporting the receipt of goods,[3] and making prompt transfer of goods to the appropriate warehouse or department.

Review Question

What are the fundamental responsibilities of each position: accounts payable supervisor, receiving supervisor, purchasing manager, and buyer?

The chief purchasing executive assumes various titles in different companies, such as manager of purchasing, director of purchasing, or purchasing agent. We use the term *purchasing manager.* The purchasing manager usually performs major buying activities as well as the required administrative duties of running a department. In many organizations, professional buyers do the actual buying.

[3] In this section and the section describing the logical PtoP process, we assume that the receiving supervisor also is responsible for indicating that *services* have been received. In practice, the receipt of services might well be reported by various operating departments instead.

A Horizontal Perspective

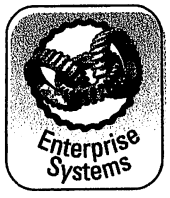
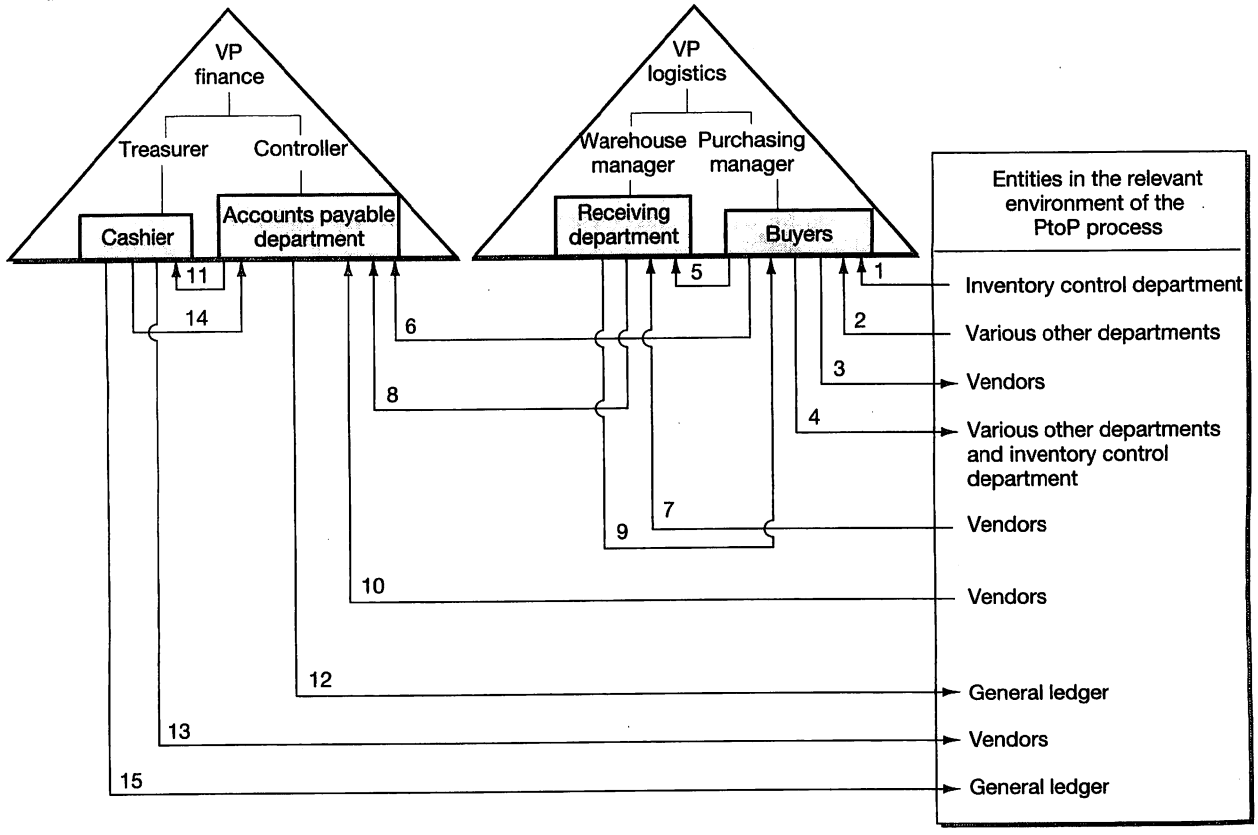


Figure 12.3 presents a horizontal view of the relationship between the PtoP process and its organizational environment. They show various information flows generated or captured by the process. After reviewing Figure 12.3, read Technology Insight 12.1 (page 424), which discusses how horizontal information flows in an enterprise system become automated and therefore more efficient in terms of supporting the PtoP process.

Figure 12.3 A Horizontal Perspective of the PtoP Process



NOTES:

1. The information flows are representative of those related to the PtoP process. The figure, however, does not show all information flows. For example, purchase returns are not shown.
2. See Table 12.1 for a description of information flows 1–15.

Table 12.1 Description of Information Flows*

Flow No.	Description
1	Purchase requisition sent from inventory control department to purchasing department
2	Purchase requisitions from various other departments sent to purchasing department
3	Purchase order sent to vendor
4	Purchase order notification sent to various other departments or to inventory control department
5	Purchase order notification sent to receiving department
6	Purchase order notification sent to accounts payable department
7	Goods and services received from vendor
8	Receiving notification sent to accounts payable department
9	Receiving notification sent to purchasing department
10	Invoice received from vendor
11	Approved voucher sent to cashier
12	Accounts payable notification and inventory cost information sent to general ledger
13	Check sent to vendor by cashier
14	Paid voucher returned to the accounts payable department
15	Notification of the cash disbursement sent from the cashier to the general ledger

* Many of these steps may be automated. See Technology Insight 12.1 for a description of these steps in an enterprise systems implementation.

Goal Conflicts and Ambiguities in the Organization

As discussed in Chapter 5, the goals of individual managers may conflict with overall organizational objectives. For instance, some of the managers and supervisors shown in the organization chart (Figure 12.2 on page 421) might very well be "marching to different drummers." As one specific example, the purchasing manager may well want to buy in large quantities to take advantage of quantity discounts and to reduce ordering costs. Receiving, inspecting, and storing large quantities of inventory, however, likely presents problems for the receiving department supervisor and the warehouse manager.

In addition to goal conflicts between managers, ambiguity often exists in defining goals and defining success in meeting goals. For instance, one of the purchasing goals might be *to select a vendor who will provide the best quality at the lowest price by the promised delivery date.* But what does this goal mean precisely? Does it mean that a particular vendor must satisfy all three conditions of best quality, lowest price, and timely delivery? Realistically, one vendor probably will not satisfy all three conditions.

Recall from Chapter 5 that prioritizing goals is often necessary to choose the *best* solution given the various conflicts and constraints placed on the process. This necessity implies that trade-offs must be made in prioritizing among goals that conflict. For example, if a company operates in an industry that is extremely sensitive to satisfying customer needs, it may be willing to incur excessive cost to ensure that it is procuring the best quality goods and obtaining them when needed.

TECHNOLOGY INSIGHT 12.1

Enterprise System Support for Horizontal Information Flows

The information flows presented in Figure 12.3 (page 422) are very similar to what we would expect if the organization were using an enterprise system. However, many of the tasks outlined for that figure would occur quite differently because of the messaging capabilities embedded in contemporary enterprise systems. Let us take a quick look at each of the information flows for Figure 12.3.

1. When the inventory control department enters the purchase requisition, the requisition is automatically entered into the database for processing by the purchasing department.
2. Similarly, as purchase requisitions are entered into the system by various other departments, the requisitions are automatically entered into the database to await processing by the purchasing department.
3. Purchase orders are transmitted to vendors. Usually, these purchase orders are transmitted via EDI transmission either automatically by the enterprise system or upon a release (i.e., an authorization) keyed in by the purchasing department.
4. When the purchase order is released, the release is recorded in the database and instantly available for the initiating department's review, should a department want to check on the status of a purchase order.
5. The recording of the purchase order release also makes the necessary portions of the purchase order information available to the receiving department for review when the vendor delivers the goods or services.
6. Recording the purchase order release also places the data on the authorized purchase order list for review by the accounts payable department.
7. Goods and services are received from vendor.
8. When the receiving department enters information upon receipt of the goods and services, the purchase order is automatically flagged for receipt and, therefore, for processing by accounts payable department.
9. This entry to the system (in step 8) also notifies the purchasing department that the goods and services have been received. These data become part of the vendor's history.
10. Invoice is received from vendor—this normally arrives as an EDI transmission from the vendor.

TECHNOLOGY INSIGHT 12.1 *(continued)*

11. Approval of voucher is recorded to the database, flagging the purchase for payment by the cashier. This approval may be automatically performed by embedded rules in the enterprise system.
12. Accounts payable information is automatically flagged for inclusion in the general ledger and inventory costing information.
13. Cashier sends check to vendor. Again, this step may be an authorized electronic funds transfer (EFT), either by the cashier or automatically per embedded rules in the enterprise system.
14. Payment is entered into the database and immediately made available for viewing by the accounts payable department.
15. The entry of the cash disbursement authorization flags the database and creates the source of the update in the general ledger.

Logical Process Description

This section expands on the PtoP process. Once again, logical data flow diagrams present the basic composition of a typical process. We consider the relationship between certain goals of the process and the process' logical design. The section includes brief discussions of the interfaces between the PtoP and Inventory processes. We also examine the process' major data stores.[4]

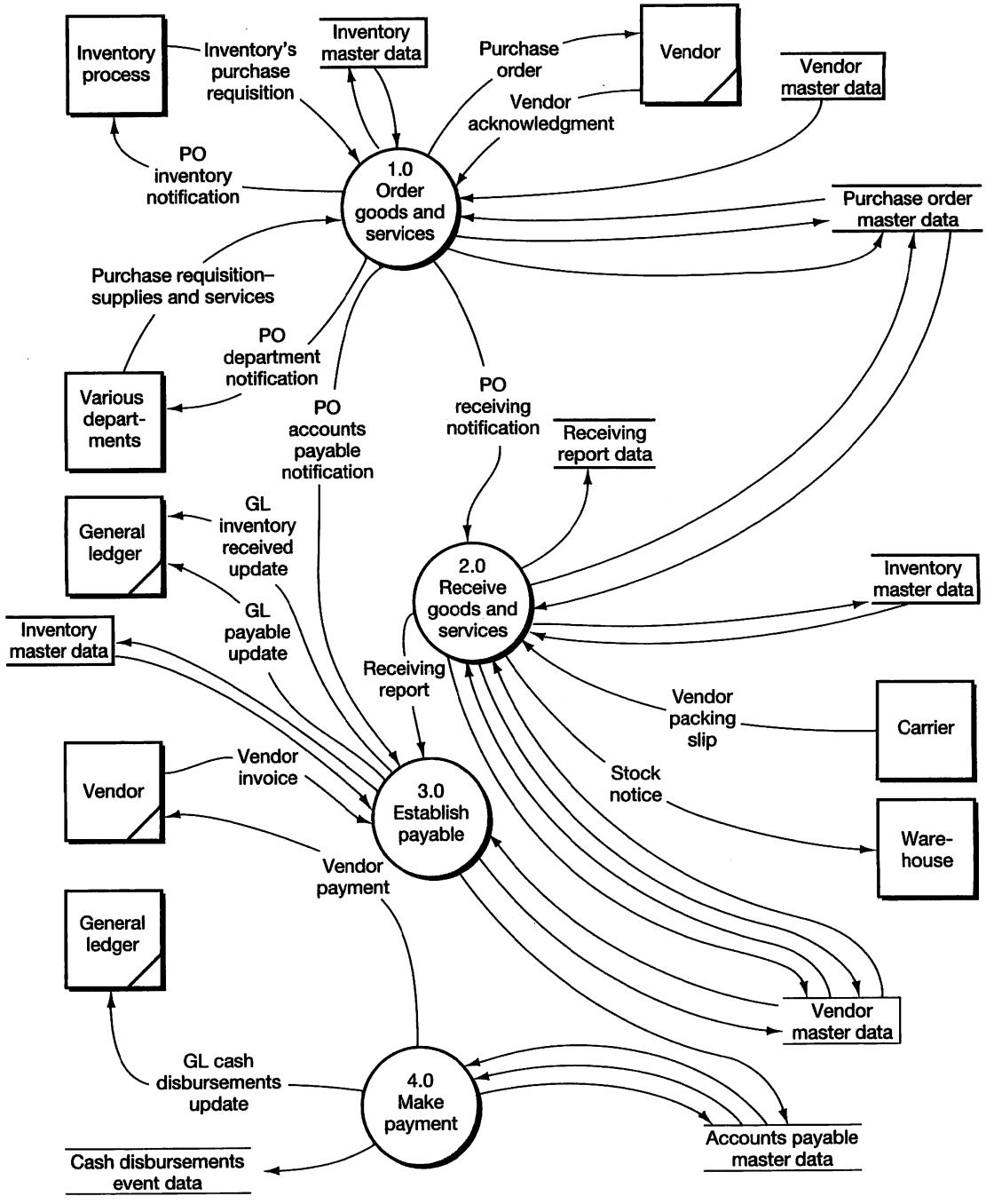
Discussion and Illustration

Figure 12.4 (page 426) reflects the level 0 data flow diagram for a typical PtoP process. To focus our discussion, we have assumed that the PtoP process performs four major subprocesses, represented by the four bubbles in the DFD.

Note that purchase requisitions are initiated by entities outside the context of the PtoP process. The purchasing process begins with each department identifying its need for goods and services. These needs are depicted by one of two data flows entering bubble 1.0: *inventory's purchase requisition* or *purchase requisition—supplies and services.*

[4] As we have in several earlier chapters, we remind you once again that the data stores in the logical DFDs and systems flowchart might well be the PtoP process's view of an *entity-wide database.*

Figure 12.4 The PtoP Process—Level 0 Diagram



Note:
This figure demonstrates payments made for material purchases. It does not cover the special case of payroll processing, in order to present a simplified diagram. Recognize that while payroll may constitute a significant pattern of expenses in a company, it is usually a separate payment process.

Review Question

What major *logical* processes does the PtoP process perform?

Review Question

Why is the process of identifying the need for goods and services not technically considered part of the PtoP process?

Figure 12.5 is an example screen for an electronic **purchase requisition,** which is an internal request to acquire goods and services. Observe the various items included in the header and body of the requisition, including company data and items to be ordered. The requisitioning department supervisor usually approves the requisition.

At first glance, the processes involved in preparing a purchase requisition may appear to be quite simple and straightforward. However, a closer analysis reveals that the techniques and methods involved in determining *what* inventory to order, *when* to order it, and *how much* to order are considerably more intricate and complex than we might first imagine. The processes associated with reordering inventory involve several important concepts and techniques, such as cyclical reordering, reorder point analysis, economic order quantity (EOQ) analysis, and ABC analysis. We discuss each of these methods in Technology Insight 12.2 (page 428).

Each of the four process bubbles shown in the level 0 diagram are exploded in Appendix A, along with a discussion of the handling of *exception routines.*

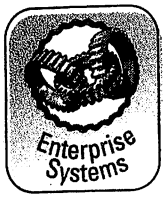
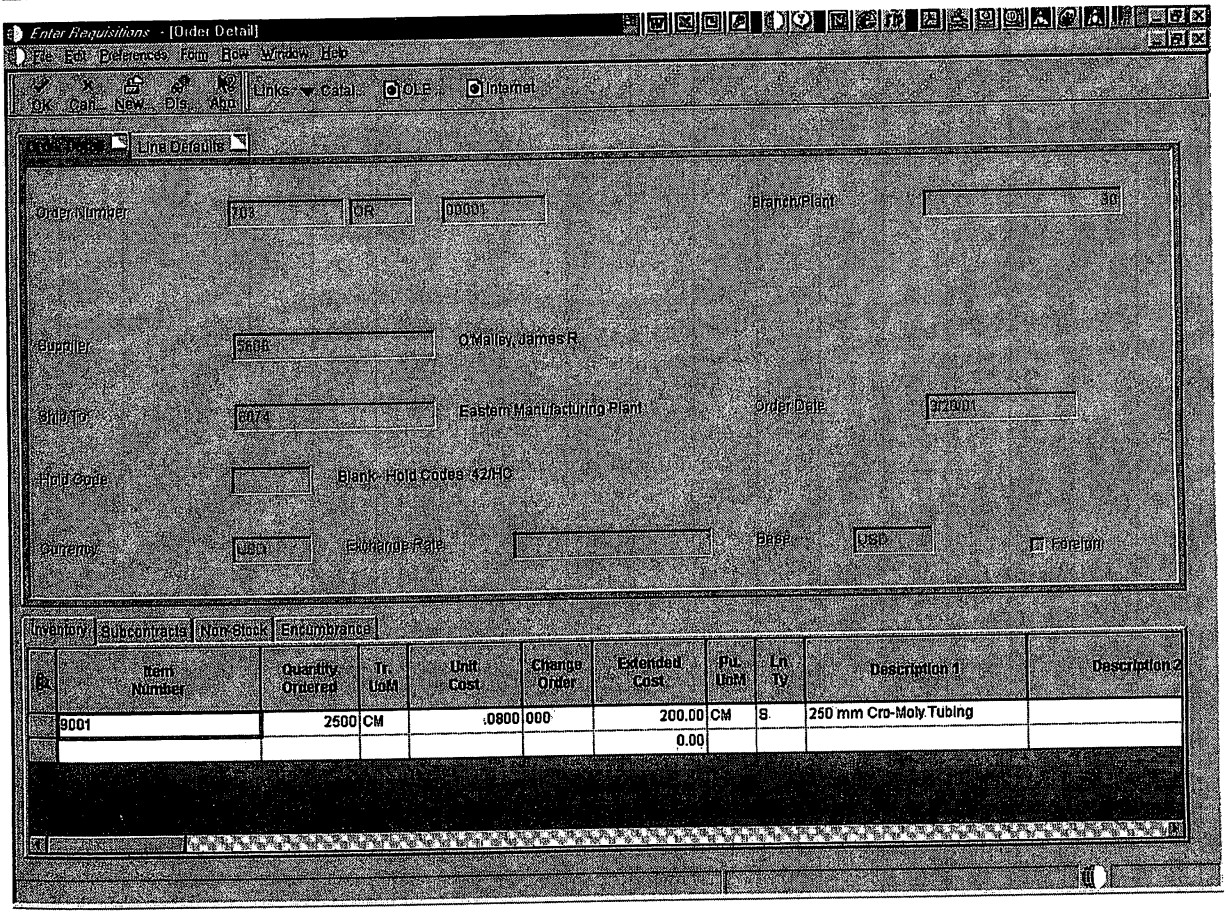


Figure 12.5 Sample Purchase Requistion Screen (JD Edwards)



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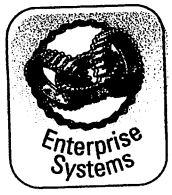
TECHNOLOGY INSIGHT 12.2

Inventory Reordering Processes

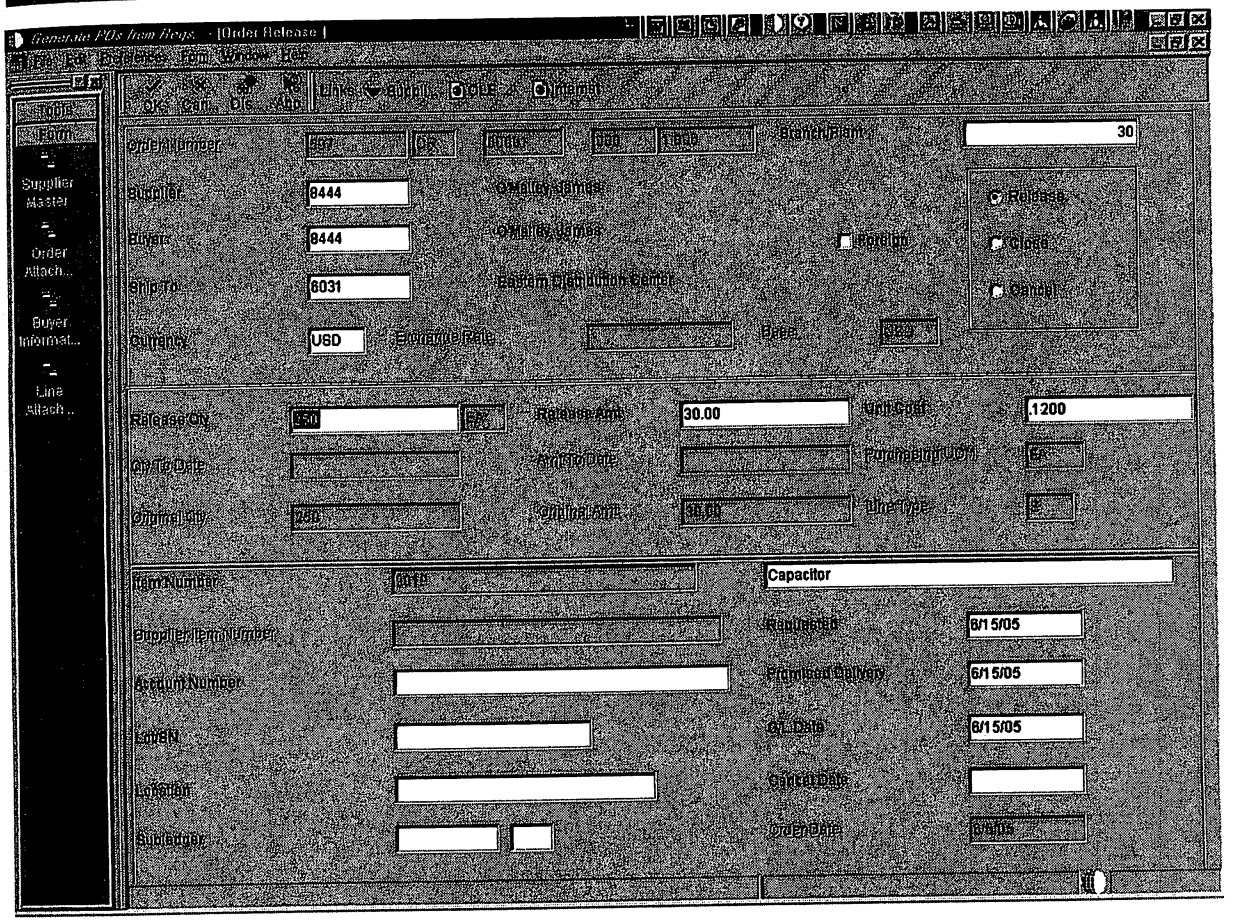
- **Cyclical reordering** is a *time-based* approach to reordering inventory. In practical terms, cyclical reordering assesses an organization's total inventory (on a periodic basis) to determine the status of individual inventory items. If the stock levels for a given inventory item appear to be insufficient to meet customer needs for the upcoming period, a purchase requisition is prepared.
- **Reorder point (ROP) analysis** recognizes that each item of inventory is unique with respect to the rate at which it is sold. Based on each inventory item's sales rate, a reorder point is determined. Thus, when the on-hand level for an item falls to its specified reorder point, the item is reordered.
- **Economic order quantity (EOQ)** is a technique of analyzing all incremental costs associated with acquiring and carrying particular items of inventory. *Inventory carrying costs* are composed of five cost elements: (1) opportunity cost of investment funds, (2) insurance costs, (3) property taxes, (4) storage costs, and (5) cost of obsolescence and deterioration.
- **ABC analysis** is a technique for ranking items in a group based on the output of the items. ABC analysis can be used to categorize inventory items according to their importance. A given organization, for example, may have a situation where 15% of its inventory items accounts for 70% of its total inventory investment. Let's call this portion group A. Furthermore, an organization may find that an additional 10% of its inventory items account for an additional 20% of its total inventory investment. Let's call this portion group B. From this assessment, we can now deduce that the remaining 75% of the organization's inventory items constitute only 10% of its inventory investment. With this information in hand, the warehouse manager or the supervisor of inventory control can decide which items of inventory are relatively more important to an organization and, consequently, require more attention and control. For instance, category C items might be ordered on a *cyclical* basis, whereas categories A and B might be ordered using *reorder point* analysis.

Vendor selection can have a significant impact on the success of an organization's inventory control and manufacturing functions. For example, goods must arrive from vendors when needed and must meet required specifications.



After selecting a vendor, the buyer prepares a **purchase order**, a request for the purchase of goods or services from a vendor. Typically, a purchase order contains data regarding the needed quantities, expected unit prices, required delivery date, terms, and other conditions. Figure 12.6 displays a requisition record with the necessary information to release the associated purchase order.

Figure 12.6 Sample Purchase Order Release Screen (JD Edwards)



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The purchase order notification could take a number of forms—including paper or electronic. It is not uncommon for the copy available for the receiving department to be a blind copy, meaning that certain data are blanked out (i.e., blinded) or simply not included in an electronic replica. For instance, the quantities ordered might be blanked out so that the receiving personnel will not be influenced by this information when counting goods. Price data may also be blinded because receiving personnel have no need to know that information.

At some point, the vendor uses a notification known as a vendor acknowledgment to inform the purchaser that the purchase order has been received and is being processed. In the case of inventory, the vendor packing slip, which accompanies the purchased inventory from the vendor and identifies the shipment, triggers the receiving process. Once annotated with the quantity received, the PO receiving notification becomes a receiving report, which is the form used to document and record merchandise receipts.

As in the case of the receipt of goods, services received also should be documented properly. Some organizations use an acceptance report to acknowledge formally the

satisfactory completion of a service contract. The acceptance report data supports the payment due to the vendor in the same way as the receiving report.[5]

The accounts payable process is triggered by receipt of the vendor invoice, a business document that notifies the purchaser of an obligation to pay the vendor for goods or services that were ordered by and shipped to the purchaser. (Figure 11.5, on page 384, shows a typical invoice screen).

Review Question

In designing vendor records to be incorporated into the vendor master data, what specific data elements would you include to help you select the best vendor? Be specific as to the nature of the data stored and how it will be used in the selection process.

Logical Data Descriptions

The general PtoP process entails several different data stores. The accounts payable master data contain all unpaid vendor invoices. The design of the accounts payable master data should consider how data are processed when the cash manager is deciding what payments to make. For example, the manager may want to merge vendor invoices so that the total amount due each vendor can be accumulated. Alternatively, the manager might want to select specific invoices for payment.

The vendor master data contain a record of each vendor from whom the organization is authorized to make purchases. Purchasing personnel when selecting an appropriate vendor usually accesses the data. During processing, vendor data are retrieved to prepare purchase orders and to issue payments. In addition to storing identification data, vendor data are used by management to evaluate vendor performance and to make various ordering decisions.

The purchase order master data are a compilation of open purchase orders and include the status of each item on order. To keep track of a purchase, the purchasing department generally creates an entry in the purchase order master data. The data are a compilation of open purchase orders, including information about the status of each item on order. The order is closed only on receipt and acceptance of all goods detailed on the order.

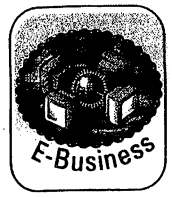
Other data stores appearing in the data flow diagrams are the:

- ◇ Inventory master data, which contain a record of each inventory item that is stocked in the warehouse or is regularly ordered from a vendor. These records are used to manage the inventory and to support the inventory balance in the general ledger.
- ◇ Receiving report data, which contain a record of each receipt. These data combine purchase order data with the quantity received and date goods were received.
- ◇ Cash disbursements event data, which show, in chronological sequence, the details of each cash payment made.

Technology Trends and Developments

Recall from Chapter 4 the rapid movement toward electronic document interchange (EDI) to improve the business processes between two organizations exchanging goods. The PtoP process is the primary candidate for EDI in major organizations

[5] For simplicity in drawing the DFDs, we intend that the single data flow labeled *receiving report* represents either a receiving report (goods) or acceptance report (services).



(although they certainly may use this technology in the Order-to-Cash process as well). As noted in Technology Application 12.1, several major companies have implemented EDI systems into the PtoP process, resulting in significant cost savings. An increasing trend among some of these major companies is to require all vendors to use EDI in their business processes with the company.

TECHNOLOGY APPLICATION 12.1

Uses of Electronic Data Interchange for the PtoP Process

Case 1

Kaiser Permanente of Southern California is a pioneer in trying to cut medical costs. One more way to do that is through the accounts payable and cash disbursements process. The Southern California region alone processes more than 1 million invoices and 800,000 claims with over 500,000 payments. A small cut in the cost of processing each transaction adds up quickly. The solution was to move to EDI for its patient care providers—both inside and outside the managed care program. Kaiser implemented the ANSI X12 837 healthcare claims standard specifically designed for the detailed health care information required for claims processing. In cases where the provider only accepts a check, check processing has been outsourced at a savings of 35%–40%. For vendors who accept electronic funds transfers (EFT), the savings are even greater.

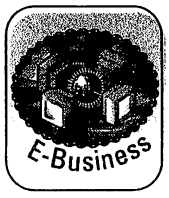
Case 2

John Hancock Mutual Life Insurance Co. spent $337 million in 1997 on supplies needed to run its business. Only 8% of these purchases went through the central purchasing department, though. The result was huge cost compared to prices that could have been negotiated on bulk purchases. Armed with a new intranet system, Hancock Mutual now processes 85% of those purchases through central processing while maintaining zero growth in staffing of the purchasing department. The key is to run all small ticket items such as office supplies and business cards through central purchasing along with big ticket items such as personal computers and contract labor. Employees simply point and click to select items from the intranet Web page displaying available goods and services. Orders route through an automatic electronic approval process based on the individual's purchasing privileges. Authorized purchases are transferred electronically to central purchasing. Another key to the system is that the intranet is also integrated into the enterprise system to make sure orders pass through back-end processing and to facilitate payment through the EDI system, which further minimizes transaction costs.

Case 3

Cummins Engine Co. is a leader in using EDI to make advances in global markets to sell its products. It shouldn't come as a big surprise that Cummins also uses EDI extensively to make its own purchases, since the same economies are garnered on both sides of the transaction. The company has found on average that suppliers receive their orders two to three days earlier than they would under the old process. Additionally, the electronic form of the order generally triggers a faster response by the supplier because any manual data entry steps are generally avoided. These small changes in timing allow for more efficient inventory and supplies management, while also providing major costs savings in processing purchases.

Sources: Sharon Watson, "Kaiser Taking Advantage of EDI to Process Claims Online," *Computerworld* (August 8, 1997); Carol Sliwa, "Purchasing Via Web to Save Big Bucks," *Computerworld* (July 20, 1998): 1, 14; Suruchi Mohan, "Engine Manufacturer Cuts Costs Worldwide," *Infoworld* (April 6, 1998).



You may also recall in Chapter 4 that we discussed the emergence of electronic marketplaces that create a more competitive purchasing market. The introduction of these marketplaces into the business processes of major business organizations is usually the Purchase-to-Pay process. Accordingly, we explore several examples of such marketplaces arising in certain industries as described in Technology Application 12.2. Recall from Chapter 4, however, that there are many risks also involved in the move towards electronic marketplaces that may limit success in the short-term.

TECHNOLOGY APPLICATION 12.2

Uses of B2B Marketplaces for the PtoP Process

Case 1

A trend in the B2B electronic marketplaces environment has been a move toward consolidation of the numerous marketplaces that popped up quickly in the early 2000s. One example is the merger between MyAircraft and AirNewco—two early entrants into the electronic marketplaces for supplying aviation-related supplies and materials. MyAircraft was a joint venture by supplier organizations such as United Technologies Corp., Honeywell International, Inc. (which at the time of this writing is in the process of merging with General Electric), and BF Goodrich Co. On the other hand, AirNewco was a joint venture by buyer organizations, including eight major international airlines and the United Parcel Service of America, Inc. The result of the merger is a single major exchange that represents the interests of both suppliers and buyers.

Case 2

In one of the earliest major marketplaces to arise, Covisint quickly gained the attention of the Federal Trade Commission (FTC) for possible limitations on fair trade. Covisint is a joint venture of the Big Three U.S. automakers and so has the potential to change radically the pricing and partnering structures of the three automakers with numerous automotive parts suppliers. The FTC ultimately gave its blessings to the new electronic marketplace in September 2000 after apparently recognizing the enormous cost savings and efficiencies that would likely result from such a venture through sharply reduced sales and distributions costs and through streamlining of purchasing operations at the automakers.

Case 3

An alternative to the creation of a public electronic marketplace such as Covisint is the creation of a private network such as the approach used by Toyota Motor Sales USA Inc. Toyota hopes to decrease about $175 million from inventory levels (roughly 50%) by using a private electronic marketplace to replenish necessary automotive parts supplies from its established suppliers. The reduction in inventory may save $30 million per year once the exchange is operating fully. Toyota is not the only company turning to private exchanges with their own supplier networks. While there are an estimated 600 planned or operating public electronic exchanges, about 30,000 such private exchanges are planned. These exchanges may link as few as a half-dozen suppliers in some cases, but are still expected to provide most of the benefits of larger public exchanges without many of the risks.

Sources: Todd R. Weiss, "Two Aviation Industry B2B Marketplaces Agree to Merge," *Computerworld Online* (October 26, 2000); John R. Wilke, "Green Light Is Likely for Auto-Parts Site," *The Wall Street Journal* (September 11, 2000): A3; Steve Ulfelder, Members Only Exchanges—Building a Private Business-to-Business Exchange Has its Benefits—and Challenges," *Computerworld Online* (October 23, 2000).

Physical Process Description

As the name implies, paperless systems eliminate documents and forms as the medium for conducting business. In a truly paperless system, printed reports are replaced with screen displays of requested information. With the increasing use of EDI, *electronic funds transfer (EFT), digital image processing, electronic mail, workflow software, enterprise systems,* and similar technologies, is the paperless office at hand? A growing number of organizations operate the bulk of their business processes using *paperless systems.* The major roadblocks are more likely to be organizational and behavioral/psychological than technological in nature. Over time, these cultural barriers to the paperless office continue to disintegrate as a new generation of managers—who have grown up with the computer as a fact of their daily lives—emerges. Online billing is one area wherein widespread acceptance is beginning to be noted. See Technology Excerpt 12.1 for a discussion of the benefits of online bill presentment and payment.

The physical model of the PtoP process presented in this section employs *electronic payments* and *data communications* technology. Although the process is not completely *paperless,* hard copy documents are held to a minimum.

Discussion and Illustration

Figure 12.7 (pages 434–437) presents a systems flowchart of the process. At several points in the flowchart, you see notations that *exception routines* are not flowcharted. They are also omitted from the discussion in the following paragraphs.

Technology Excerpt 12.1

Online Bill Presentment and Payment

Although most of the hype in online billing is for business-to-consumer billing (such as utilities and communication companies), more than half of the 20 billion electronic bills issued each year are to businesses. New bill payment service providers let companies receive electronic bills and pay them directly from their bank account.

How This Saves Money

- *Lower cost per bill payment.* Traditional paper-based payments including stamps, checks, and envelopes cost about $0.50–$1.50 each. For about 25 monthly online payments, the cost per payment ranges from $0.24 to $80, depending on the vendor and additional services selected.
- *Save time* by receiving e-mail notification of new bills and paying them online instead of offline. The time it takes to manually open envelopes and print checks is significantly reduced. Helpful features like receiving e-mail reminders of bills due and designating bills for automatic payment also save time.
- Companies can even *make interest off the float* in their bank accounts by controlling exactly when payments are made.

Source: www.dotcomadvisor.com, September 20, 2000.

Figure 12.7 PtoP Process—Systems Flowchart

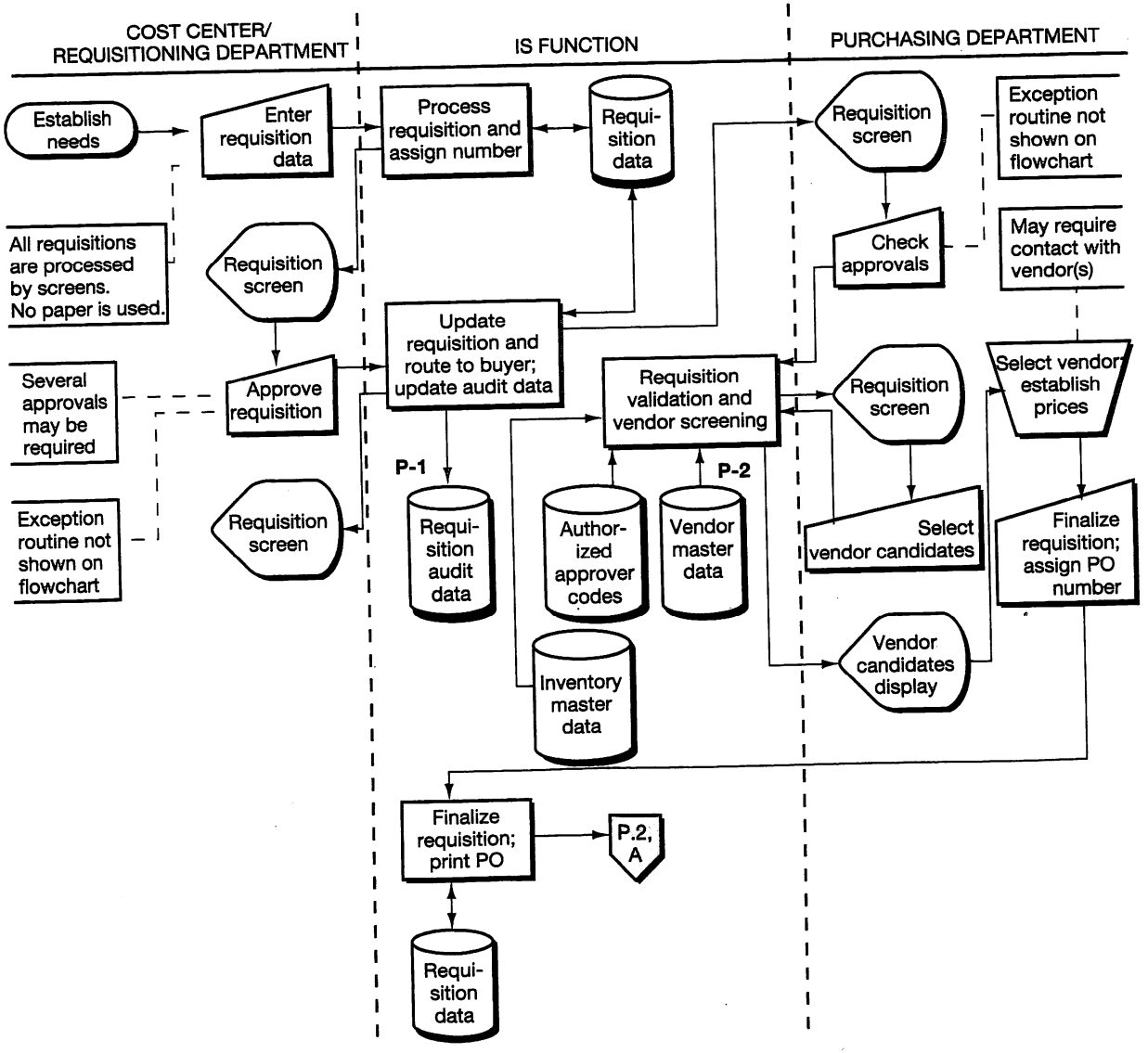


Figure 12.7 PtoP Process—Systems Flowchart *(continued)*

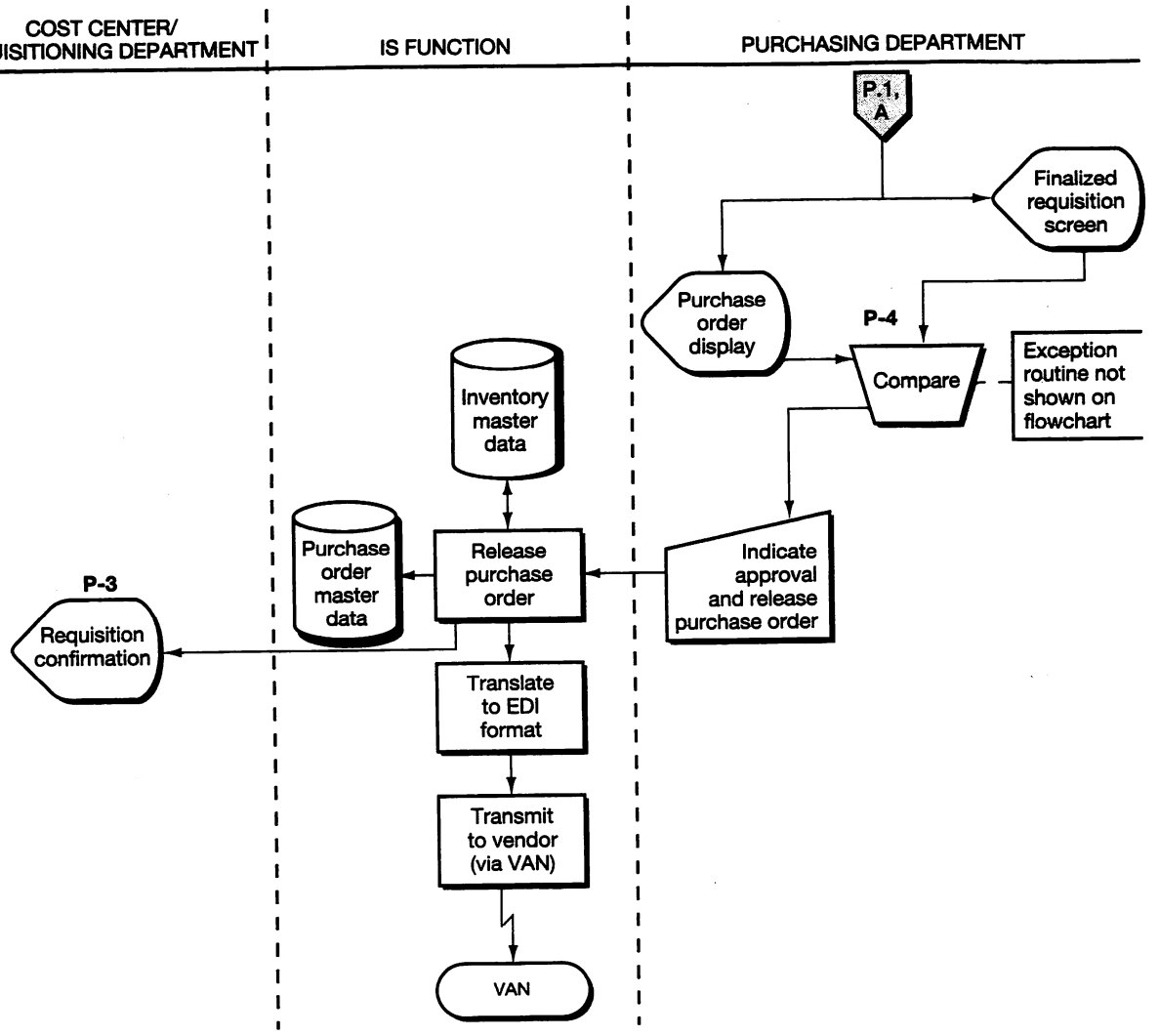


Figure 12.7 PtoP Process—Systems Flowchart *(continued)*

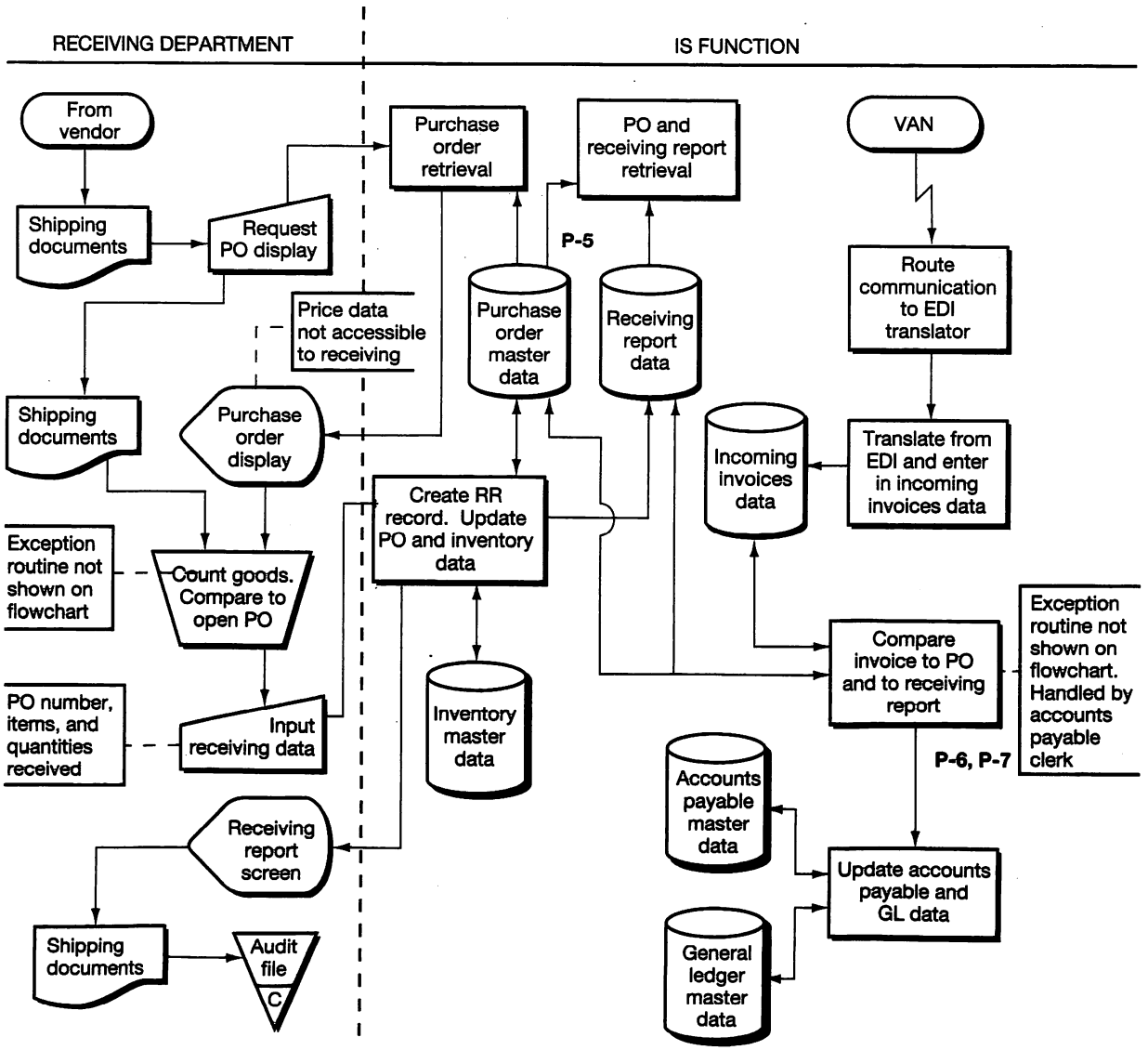
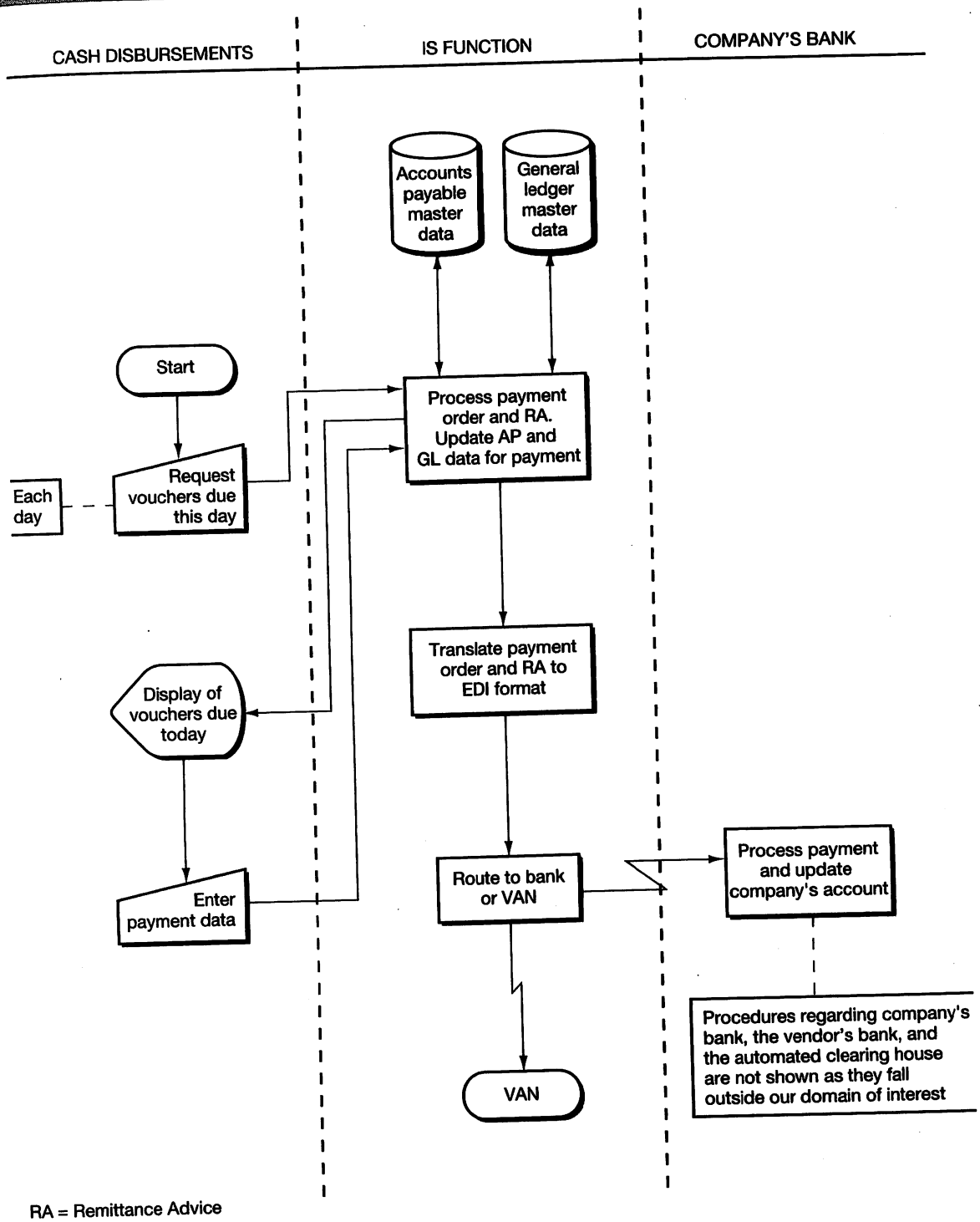


Figure 12.7 PtoP Process—Systems Flowchart *(continued)*



RA = Remittance Advice

Requisition and Order Merchandise As shown in the first column, the purchasing process begins when a cost center employee establishes a need and completes a requisition form on the computer system. When a requisitioner calls up the system, the system automatically supplies a four-digit requisition number. The requisitioner designates the items desired, as well as information about the cost center making the request.

The completed requisition is routed via the system to a cost center supervisor for approval. Depending on the amount and nature of the requisition, several approvals may be required. Approval is granted in the system by forwarding the requisition to the next person on the list; approval codes are attached to the record along the way and are displayed in the appropriate boxes on the requisition form. The approved requisition is automatically recorded to the audit data and routed to the purchasing department.

In the purchasing department, a buyer checks the requisition for proper approval by matching the codes against "authorized approver" data. Then, vendor candidates are chosen by consulting the inventory and vendor master data. Final vendor selection and price determination may require contact with the potential vendor. When the vendor choice is settled, the buyer updates the requisition by adding any necessary details.

Next, the system displays the purchase order (see the second page of the flowchart), and the buyer or the purchasing manager checks the purchase order data on the screen against the requisition data on the screen. The manager then approves the purchase order, a system confirmation is made available to the requisitioner, a record is created in the purchase order master data, and the inventory records are updated to reflect the quantity on order. The purchasing process releases the PO to the EDI translator, where it is converted to the appropriate EDI format. The translation software also *encrypts* the EDI message and appends a *digital signature* to it (as discussed in Chapter 9).

Receive Merchandise On the third page of the flowchart, we see that receiving department personnel receive and count the merchandise sent by the vendor. They compare the items and item quantities received to those on the open purchase order master data.[6] If the shipment is correct, they enter the receiving data into the computer. This information creates a record in the receiving report data, updates the status field in the purchase order data, and records the receipt in the inventory master data. The shipping documents are filed in chronological sequence for *audit trail* purposes. Alternatively, an image of the shipping documents might be stored on the computer.

Establish Accounts Payable The organization's system picks up the vendor's invoice from the Value-Added Network (VAN) and routes it to the EDI translator. The EDI translator converts the invoice to the appropriate format and records it in the incoming invoice data. Triggered by the receipt of a batch of EDI invoices, the accounts payable application accesses the purchase order and receiving report data and compares the items, quantities, prices, and terms on the invoice to comparable data from the PO and receiving report data. If the data correspond, a payable

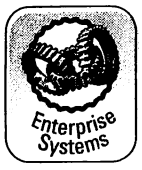
[6] The database software prevents receiving personnel from accessing price data in the purchase order master data. In this way, the process implements the *blind copy* concept explained earlier.

is created, and the general ledger is updated. The purchase order, receiving report, and invoice data must be marked so that it cannot be used to establish another payable.

Make Payments The physical model depicted on the fourth flowchart page utilizes EDI to make the payment. Banks that are members of the National Automated Clearing House (ACH) Association combine EDI and electronic funds transfer (EFT) standards to transmit electronic payments between companies and their trading partners.

As shown in Figure 12.7, the accounts payable master data are searched each day for approved vendor invoices due that day. The cash disbursements application prepares the payment order and remittance advice, updates the accounts payable master data and the general ledger for the payment, and sends the data on to the EDI translator. The translator converts the data to the appropriate format, encrypts the message, adds a digital signature, and sends the EDI payment order and remittance advice on to the communications network.

If the bank is acting as a VAN for the payment order, the communications network sends the data to the bank. Otherwise, the system sends the payment order to a VAN for pickup by the bank. The bank debits the account and then sends the payment order to an automated clearinghouse for processing. Next, the automated clearinghouse sends the data to the vendor's bank, where it is automatically credited to the vendor's bank account. Finally, the vendor's bank transmits the RA and payment data to the vendor. If the electronic remittance advice does not accompany the payment order through the banking system, it would be forwarded directly (via VAN) to the supplier.[7]



Consider how this process might change in an enterprise systems environment. After you have thought through the impact and the resulting changes to Figure 12.7, read Technology Insight 12.3, which provides an overview of how a fully implemented enterprise system affects the PtoP process discussed in this chapter.

Application of the Control Framework to General Expenditures

In this section, we apply the control framework from Chapter 9 to the PtoP process. Figure 12.8 (pages 442–443) presents a completed *control matrix* for the annotated systems flowchart shown in Figure 12.7. After briefly discussing the control goals shown as column headings in the matrix, we then consider in Exhibit 12.1 (pages 444–445) each of the recommended control plans listed in the first column. As you study the control plans, be sure to see where they are located on the systems flowchart.

[7] You should be aware that using electronic funds transfer (EFT) to wire funds between banks and employing EDI to transmit remittance data from the payer's to the vendor's computer system do *not* necessarily go hand in hand. For instance, a company could utilize EFT to make payments but still rely on paper remittance advices to notify the vendor of the details of what is being paid.