WEEK 8

CHAPTER 10

Information Systems within the Organization

CHAPTER OVERVIEW

- 10.1 Transaction Processing Systems
- 10.2 Functional Area Information Systems
- 10.3 Enterprise Resource Planning Systems
- 10.4 ERP Support for Business Processes

LEARNING OBJECTIVES

1. Explain the purposes of transaction processing systems.
2. Describe the types of support that information systems can provide for each functional area of the organization.
3. Identify advantages and drawbacks to businesses of implementing an enterprise resource planning system.
4. Describe the three main business processes supported by ERP systems.

10.1 OPENING CASE: GM TRANSFORMS ITS IT STRATEGY

The Problem

- GM had data that was separated by brands then further subdivided by vehicle models (i.e. not integrated)
- The company was accused of being too slow to recall Chevy Cobalts with ignition problems; resulting accidents were linked to deaths
- Lack of integrated data could have been one of the causes of the slowness of the recall

10.1 OPENING CASE: GM TRANSFORMS ITS IT STRATEGY

The IT Solution

- By mid-2014 GM had implemented a data warehouse with more than one petabyte of production process data
- GM can now access data in detail all the way down to VIN (vehicle identification number) or aggregate the data
- 55 of 200data marts had been consolidated at the time of writing of the case, improving data integration and the consolidation process is continuing

10.1 OPENING CASE: GM TRANSFORMS ITS IT STRATEGY

The Results

- GM apologized for the slowness of the recall
- IT changes are improving efficiency and customer service
- It is too early to tell what the impact will be on the timeliness of future vehicle recalls

10.1 OPENING CASE: GM TRANSFORMS ITS IT STRATEGY

Questions

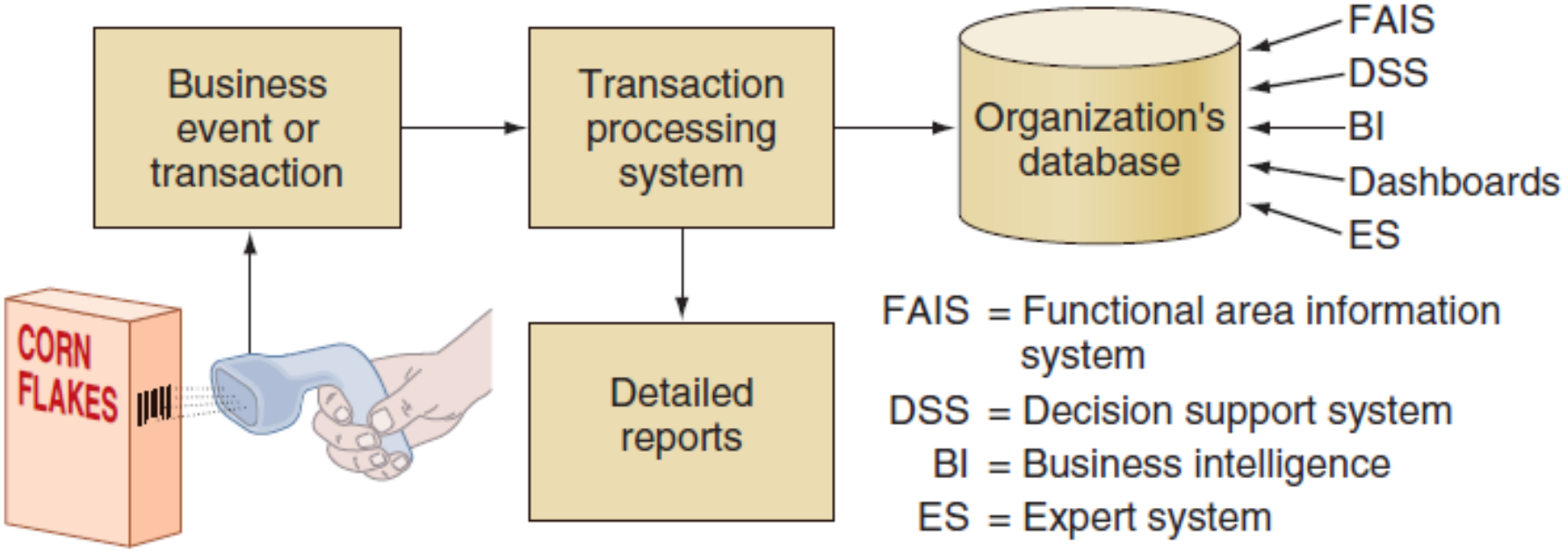
1. Take the “pros” side and discuss GM’s strategy of bringing IT in-house.
2. Take the “cons” side and discuss GM’s strategy of bringing IT in-house.
3. Discuss the ways in which information technology can help GM prevent safety problems such as the 2014 recall.
4. Explain how GM’s enterprise data warehouse relates to the topic of this chapter.

10.1 TRANSACTION PROCESSING SYSTEMS (TPS)

- A **transaction** is any business event that generates data worth being captured and stored in a database. Examples: a product manufactured, a service sold, and a payroll cheque generated.
- **Transaction processing systems (TPS)** are inputs for functional area information systems and business intelligence systems, as well as for business operations such as customer relationship management, knowledge management, and e-commerce.
- **TPS** support the monitoring, collection, storage, and processing of data generated by each of the organization's basic business transactions and are critical to their functioning.
- The TPS collects data continuously, in **real time**, as soon as the data are generated, and it provides the input data for the corporate databases.

IT's About Business 10.1 discusses the role of TPS in banking

FIGURE 10.1 HOW TPS MANAGE DATA, P. 275



MANAGEMENT OF TPS

- Database needs to be protected from errors resulting from overlapping updates
- Protection is also needed against inconsistencies arising from a failure of any component at any time
- Processes must be in place to deal with cancellation of transactions before they are updated, or the ability to reverse or make corrections or adjustments to transactions
- All transactions plus corrections, reversals or adjustments need to have an ***audit trail*** so that the transaction or business event can be tracked through the accounting records

10.2 FUNCTIONAL AREA INFORMATION SYSTEMS

- **Functional Area Information Systems (FAIS**) provide support for the various functional areas (below) in an organization by increasing each area's internal efficiency and effectiveness. They often provide information in a variety of reports.
  - **Accounting and Finance**
  - **Marketing**
  - **Production/Operations Management (POM)**
  - **Human Resources Management**

INFORMATION SYSTEMS FOR ACCOUNTING AND FINANCE

- Financial Planning and Budgeting
  - Financial and economic forecasting
  - Planning and Budgeting
- Managing Financial Transactions
  - Global stock exchanges
  - Multiple currency management
  - Virtual close
  - Expense management automation

INFORMATION SYSTEMS FOR ACCOUNTING AND FINANCE (continued)

- Investment Management
- Control and Auditing
  - Budgetary control
  - Internal auditing (for example, The Institute of Internal Auditors provides standards and accreditation for internal auditors)
  - Financial ratio analysis

INFORMATION SYSTEMS FOR MARKETING

- It is impossible to overestimate the importance of customers to any organization. Therefore, any successful organization must understand its customers' needs and wants and then develop its marketing and advertising strategies around them. Information systems provide numerous types of support to the marketing function. Examples where IT can help are:
- Providing data for customer relations
- Documenting customer profiles and preferences

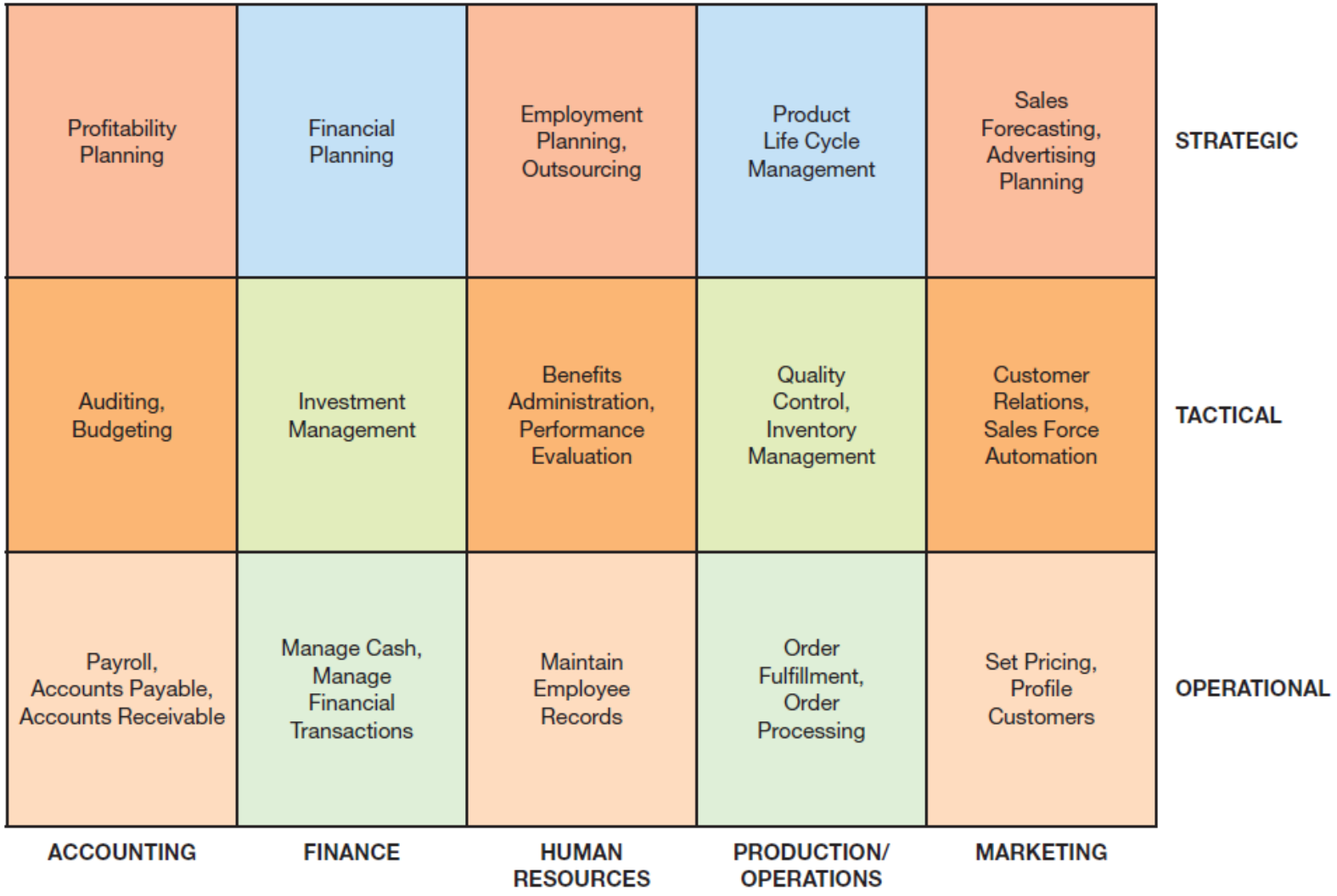
INFORMATION SYSTEMS FOR PRODUCTION AND OPERATIONS MANAGEMENT

- In-House Logistics and Materials Management
  - Inventory Management
  - Quality Control
- Planning Production and Operations
- Computer-Integrated Manufacturing
- Product Life Cycle Management

INFORMATION SYSTEMS FOR HUMAN RESOURCES MANAGEMENT

- Human resource information system (HRIS) are usually delivered via an HR portal. The following processes would be provided:
- Recruitment
- HR Development
- HR Planning and Management
- Payroll and employees' records
- Benefits administration
- Employee relationship management

Figure 10.3 Examples of Information Systems Supporting the Functional Areas, p. 283



REPORTS

- **Routine** reports are produced at scheduled intervals (hourly quality control report, daily reports on absenteeism rates)
- **Non-routine or Ad hoc** (on demand) reports:
  - Drill-down reports display a greater level of detail
  - Key-indicator reports summarize the performance of critical activities
  - Comparative reports may compare, for example, performances of different business units or of a single unit during different time periods
- **Exception** reports include only information that falls outside certain threshold standards or criteria

10.3 Enterprise Resource Planning Systems (ERP)

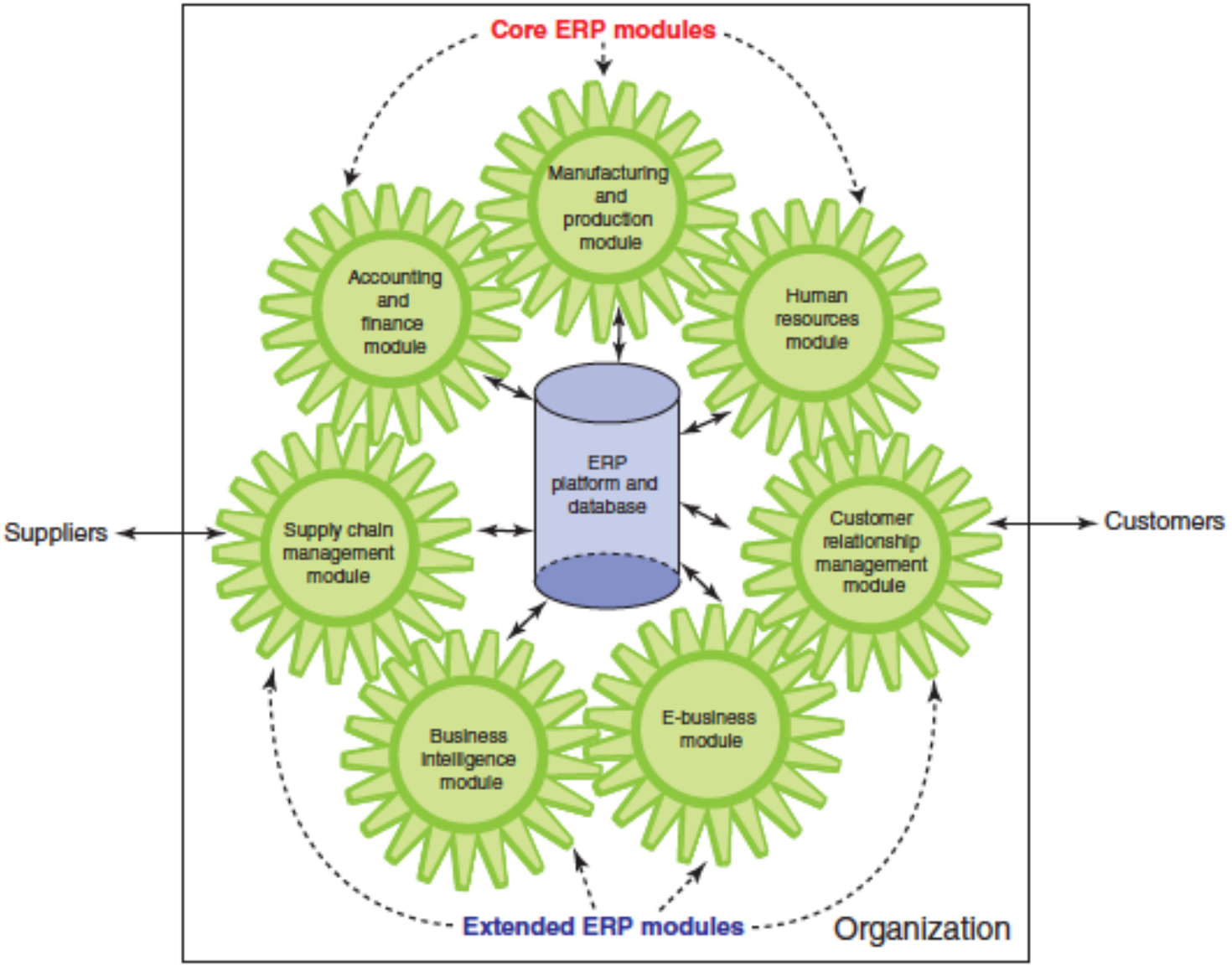
- **Enterprise Resource Planning (ERP)** systems adopt a business process view of the overall organization to integrate the planning, management, and use of all of an organization's resources, employing a common software platform and database.
  - The major objective of ERP system isto tightly integrate the functional areas of the organization, enabling information to flow seamlessly across them.
  - ERP systems function much the same as FAISs and produce the same reports.
  - ERP systems "simply" integrate the functions of the various FAISs.
  - ERP systems provide the information necessary to control the business processes of the organization.

IT's About Business 10.3 GEA Group uses SAP for Financial Reporting explains how the SAP ERP systems helped the GEA Group

ERP SOFTWARE VENDORS; ERP II

- Most organizations use commercially available ERP software from major vendors including:
  - SAP
  - Oracle
- Click here for up-to-date information on ERP software
- **ERP II systems** are interorganizational ERP systems that provide **web-enabled** links between a company's key business systems—such as inventory and production—and its customers, suppliers, distributors, and others. These links integrate internal-facing ERP applications with the external-focused applications of supply chain management and customer relationship management.

Figure 10.4 ERP II Systems, p. 286



ERP MODULES

- Extended ERP Modules
  - Customer relationship management
  - Supply Chain Management
  - Business intelligence
  - E-business

- Core ERP Modules
- Financial Management
- Operations Management
- Human resource management

BENEFITS OF ERP SYSTEMS

- **Organizational flexibility and agility.** ERP systems break down many former departmental and functional silos of business processes, information systems, and information resources. The organizations therefore can react quickly to changing business conditions as well as capitalize on new business opportunities.
- **Decision support.** ERP systems provide essential information on business performance across functional areas. This information significantly improves managers' ability to make better, more timely decisions.
- **Quality and efficiency.** ERP systems integrate and improve an organization's business processes, resulting in significant improvements in the quality of customer service, production, and distribution.

LIMITATIONS OF ERP SYSTEMS

- Companies may need to change existing business processes to fit the predefined business processes of the software (best practices). Note that best practices, by definition, are appropriate for *most* organizations. Organizations differ, however; therefore a "best practice" might not be the "best" one for your company.
- Complex, expensive, and time consuming to implement
- Underestimating the complexity of the planning, development, and training required to prepare for a new ERP system

IMPLEMENTING ERP SYSTEMS

- On-premise ERP implementation
  - Vanilla approach: use the standard ERP package
  - Custom approach: analyze needs and have the software customized in response to the documented design document
  - Best of Breed: use the ERP Vanilla software and integrate with other software
- SaaS ERP:
  - Lease ERP software that is cloud-based normally using the vanilla approach

ADVANTAGES AND DISADVANTAGES OF SAAS ERP AND EAI

- Advantages:
  - Anywhere, anytime use
  - Lower initial costs of hardware and software
  - Scalable: pay for only what you use
- Disadvantages:
  - Security issues associated with Internet-based computing
  - Using the vanilla approach potentially reduces competitive advantage
  - Usage problems if the Internet is not available or capacity problems arise with the service provider
- **E enterprise application integration (EAI) system** integrates existing systems by providing software, called *middleware*, that connects applications together, an alternative to using ERP

10.4 ERP SUPPORT FOR BUSINESS PROCESSES

- This section provides examples of how ERP can help the three common examples of cross-departmental processes:
  - Procurement
  - Fulfillment
  - Production

Figure 10.5, departments and documents flow in the procurement process, p. 291

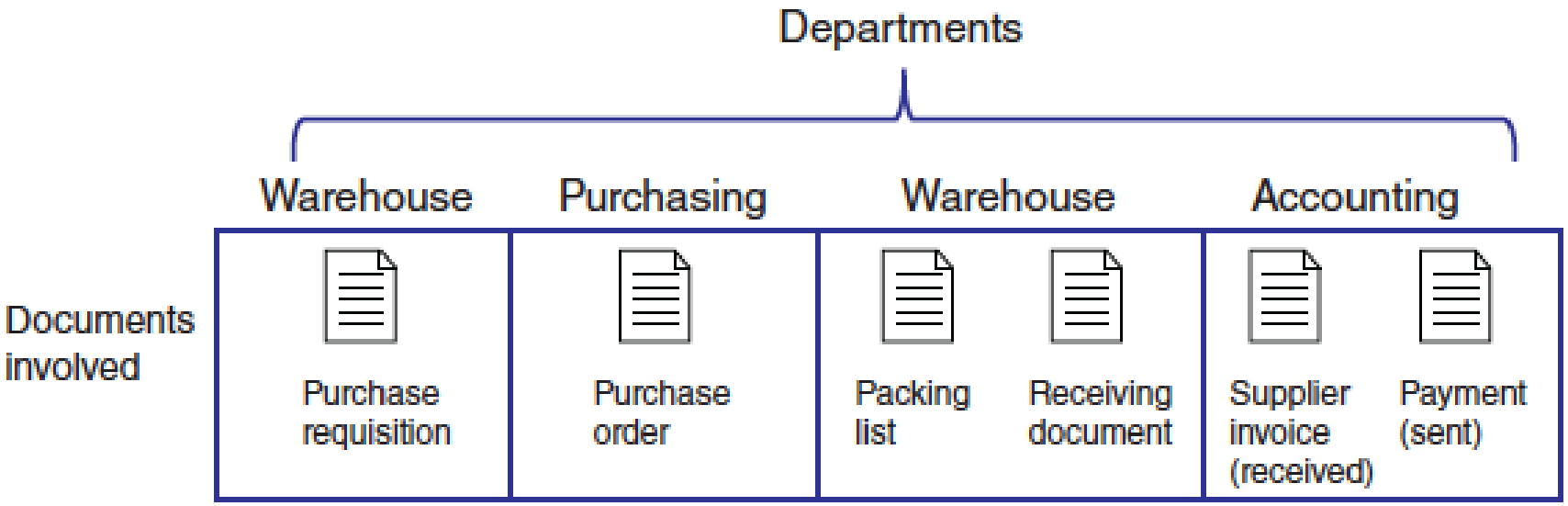


Figure 10.6 departments and documents flow in the fulfillment process, p. 292

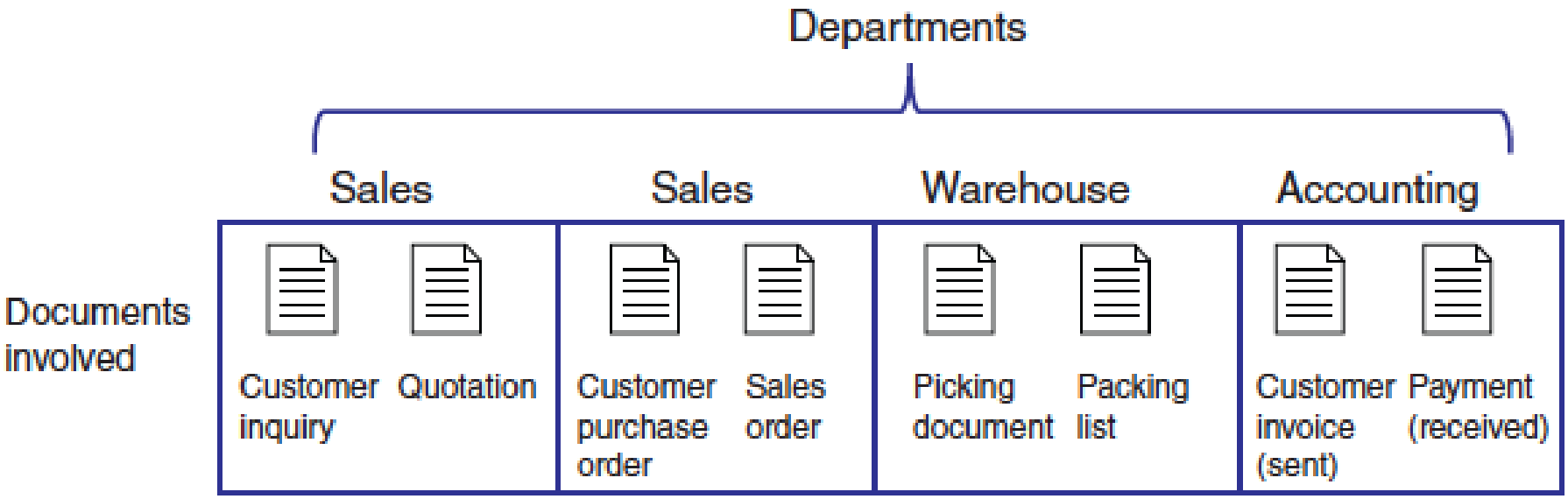


Figure 10.7 departments and document flow in the production process, p. 293

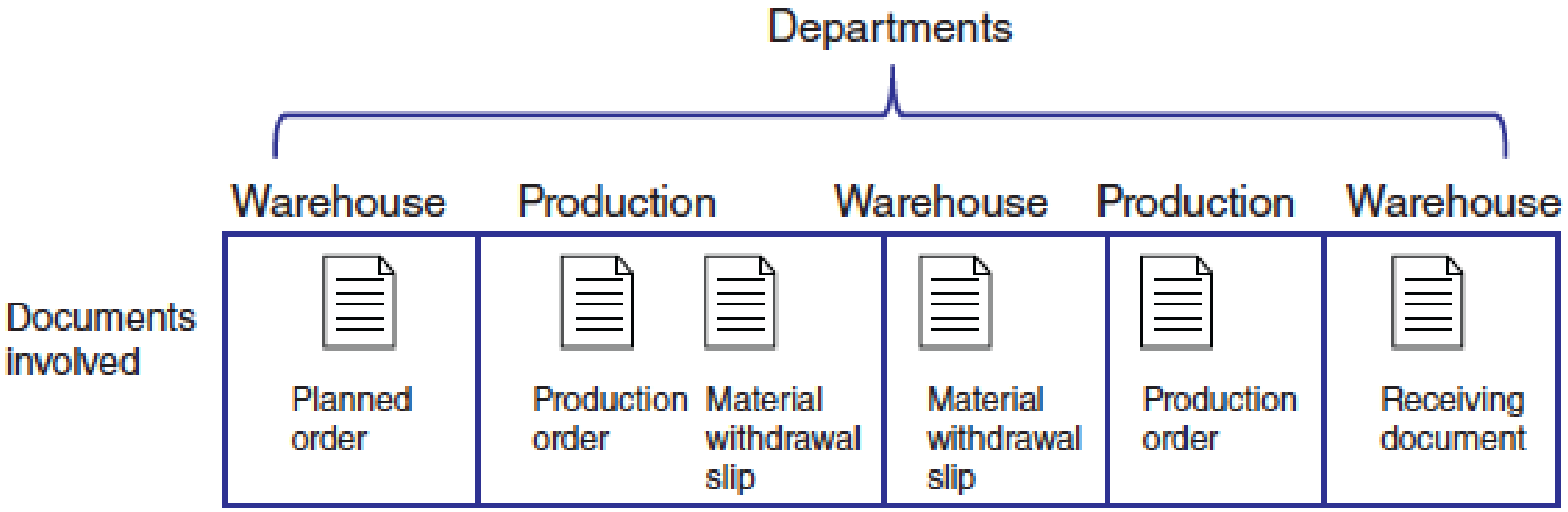
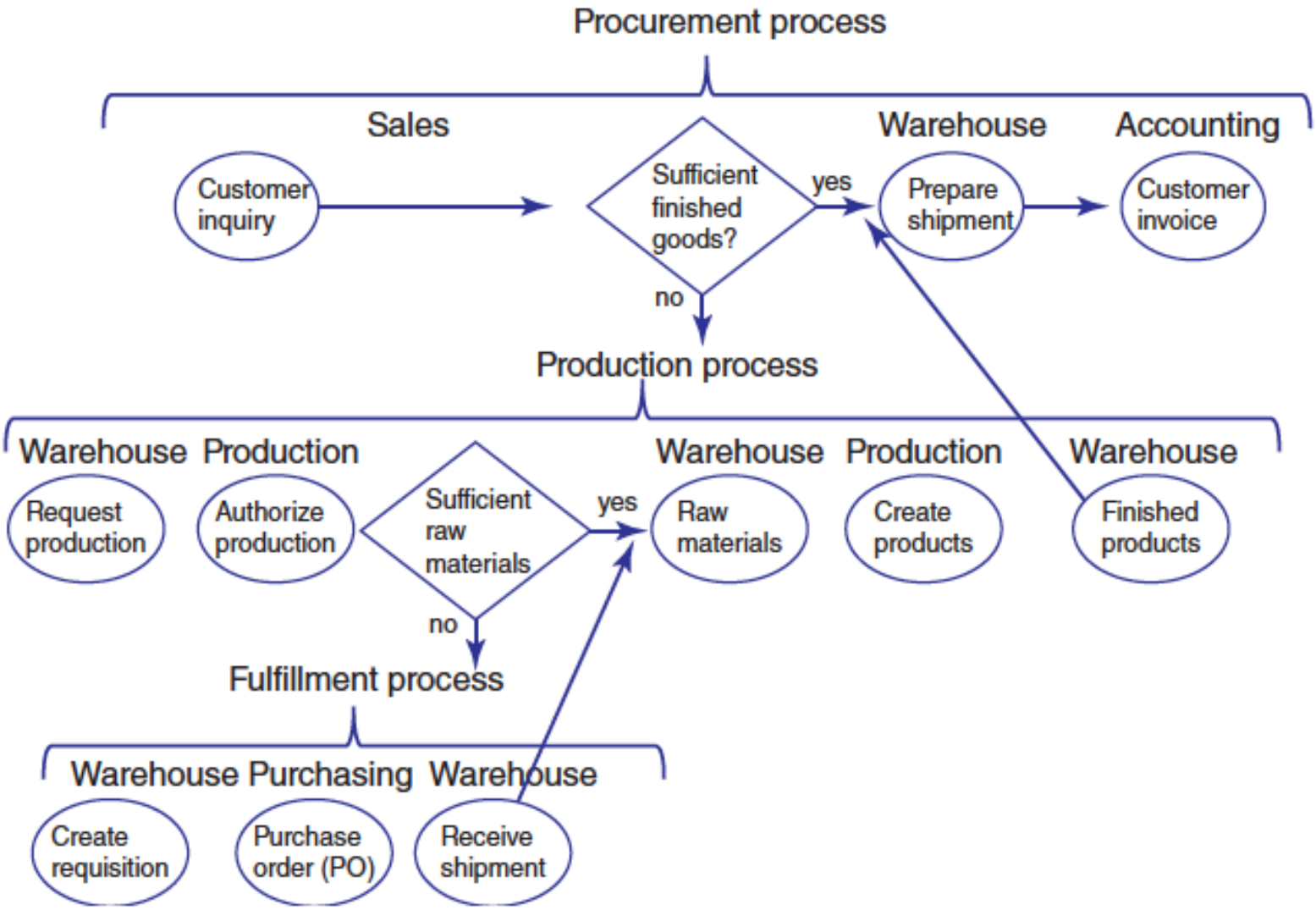


Figure 10.8 integrated processes with erp systems, p. 293



CHAPTER CLOSING

- TPSs monitor, store, collect, and process data generated from all business transactions.
- Major business functional areas are accounting/finance, marketing, production/operations management and human resources management.
- Three major types of reports generated by FAIS and ERP systems are: Routine, Nonroutine or ad hoc (on-demand) and Exception.
- Enterprise resource planning (ERP) systems integrate the planning, management, and use of all of the organization's resources. ERP II enables web-based processing.