

Information Systems within the Organization

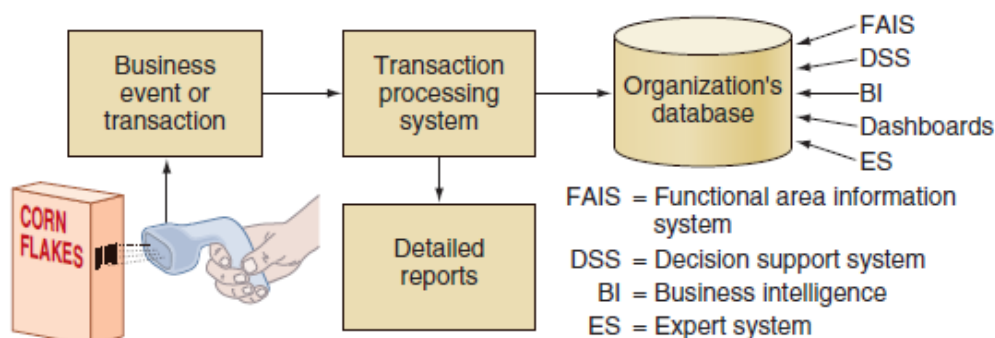
Explain the purpose of transaction processing systems

- A **transaction processing system (TPS)** supports the monitoring, collection, storage, and processing of data from the organization's basic business transactions, each of which generates data. The TPS collects data continuously, typically in *real time*—that is, as soon as the data are generated—and it provides the input data for the corporate databases. The TPSs are critical to the success of any enterprise because they support core operations.
- TPSs are inputs for the functional area information systems and business intelligence systems, as well as business operations such as customer relationship management, knowledge management, and e-commerce.

How TPSs handle the complexities of transactional data?

Consider these examples of how TPSs handle the complexities of transactional data:

- When more than one person or application program can access the database at the same time, the database has to be protected from errors resulting from overlapping updates. The most common error is losing the results of one of the updates.
- When processing a transaction involves more than one computer, the database and all users must be protected against inconsistencies arising from a failure of any component at any time. For example, an error that occurs at some point in an ATM withdrawal can enable a customer to receive cash, although the bank's computer indicates that he or she did not. (Conversely, a customer might not receive cash, although the bank's computer indicates that he or she did.)



- It must be possible to reverse a transaction in its entirety if it turns out to have been entered in error. It is also necessary to reverse a transaction when a customer returns a purchased item. For example, if you return a sweater that you have purchased, then the store must credit your credit card for the amount of the purchase, refund your cash, or offer you an in-store credit to purchase another item. In addition, the store must update its inventory.
 - It is frequently important to preserve an audit trail. In fact, for certain transactions an audit trail may be legally required.

Activities Supported by Functional Area Information Systems (FAIS):

(only main points are given... detailing should be done)

Accounting and Finance

Financial planning—and cost of money
Budgeting—allocates financial resources among participants and activities
Capital budgeting—financing of asset acquisitions
Managing financial transactions
Handling multiple currencies
Virtual close—the ability to close the books at any time on short notice
Investment management—managing organizational investments in stocks, bonds, real estate, and other investment vehicles
Budgetary control—monitoring expenditures and comparing them against the budget
Auditing—ensuring the accuracy of the organization's financial transactions and assessing the condition of the organization's financial health
Payroll

Marketing and Sales

Customer relations—know who customers are and treat them like royalty
Customer profiles and preferences
Sales force automation—using software to automate the business tasks of sales, thereby improving the productivity of salespeople

Production/Operations and Logistics

Inventory management—when to order new inventory, how much inventory to order, and how much inventory to keep in stock
Quality control—controlling for defects in incoming material and defects in goods produced
Materials requirements planning—planning process that integrates production, purchasing, and inventory management of interdependent items (MRP)
Manufacturing resource planning—planning process that integrates an enterprise's production, inventory management, purchasing, financing, and labor activities (MRP II)
Just-in-time systems—a principle of production and inventory control in which materials and parts arrive precisely when and where needed for production (JIT)
Computer-integrated manufacturing—a manufacturing approach that integrates several computerized systems, such as computer-assisted design (CAD), computer-assisted manufacturing (CAM), MRP, and JIT
Product lifecycle management—business strategy that enables manufacturers to collaborate on product design and development efforts, using the Web

Human Resource Management

Recruitment—finding employees, testing them, and deciding which ones to hire
Performance evaluation—periodic evaluation by superiors
Training
Employee records
Benefits administration—retirement, disability, unemployment, and so on

Define Functional Area Information Systems (FAIS) and list its important characteristics

- Each department or functional area within an organization has its own collection of application programs, or information systems. Each of these **functional area information systems** (FAISs) supports a particular functional area in the organization by increasing each area's internal efficiency and effectiveness.
- FAISs often convey information in a variety of reports, which you will see later in this chapter. Examples of FAISs are **accounting IS, finance IS, production/ operations management (POM) IS, marketing IS, and human resources IS.**

What is the significance of Reports? Compare and contrast the different types of Reports.

All information systems produce reports: transaction processing systems, functional area information systems, ERP systems, customer relationship management systems, business intelligence systems, and so on. We discuss reports here because they are so closely associated with FAIS and ERP systems. These reports generally fall into three categories: **routine, ad hoc (on-demand), and exception.**

1, **Routine reports** are produced at scheduled intervals. They range from hourly quality control reports to daily reports on absenteeism rates. Although routine reports are extremely valuable to an organization, managers frequently need special information that is not included in these reports.

2. At other times, they need the information that is normally included in routine reports, but at different times ("I need the report today, for the last three days, not for one week"). Such out-of-the routine reports are called **ad hoc (on-demand) reports**. Ad hoc reports can also include requests for the following types of information:

- **Drill-down reports** display a greater level of detail. For example, a manager might examine sales by region and decide to "drill down" by focusing specifically on sales by store and then by salesperson.
- **Key indicator reports** summarize the performance of critical activities. For example, a chief financial officer might want to monitor cash flow and cash on hand.
- **Comparative reports** compare, for example, the performances of different business units or of a single unit during different times.

3. Some managers prefer exception reports. **Exception reports** include only information that falls outside certain threshold standards. To implement *management by exception*, management first establishes performance standards. The company then creates systems to monitor performance (via the incoming data about business transactions such as expenditures), to compare actual performance to the standards, and to identify exceptions to the standards. The system alerts managers to the exceptions via exception reports.

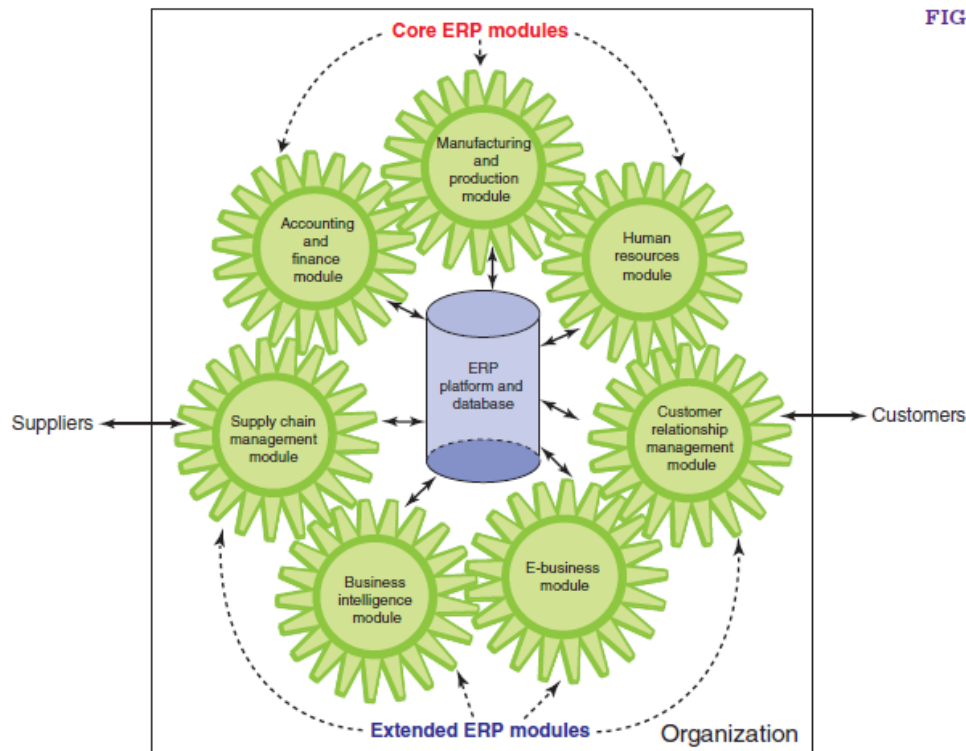
(Give examples for each)

Enterprise Resource Planning (ERP) Systems

Why ERP is required? (What is its significance?)

- Historically, the functional area information systems were developed independent of one another, resulting in **information silos**. These silos did not communicate well with one another, and this lack of communication and integration made organizations less efficient. This **inefficiency was particularly evident in business processes** that involve more than one functional area, such as procurement and fulfillment.
- Enterprise resource planning (ERP) systems are designed to **correct a lack of communication** among the functional area IS. ERP systems resolve this problem by tightly integrating the functional area IS via a common database. ERP systems credited with greatly increasing organizational productivity.
- The major objectives of ERP systems are **to tightly integrate the functional areas of the organization** and to enable information to flow seamlessly across them. Tight integration means that changes in one functional area are immediately reflected in all other pertinent functional areas. In essence, ERP systems provide the information necessary to control the business processes of the organization.
- It is important to understand here that ERP systems are an evolution of FAIS. That is, ERP systems have much the same functionality as FAIS, and they produce the same reports. ERP systems simply integrate the functions of the individual FAIS.

ERP II systems



- ERP systems were originally deployed to facilitate business processes associated with manufacturing, such as raw materials management, inventory control, order entry, and distribution.

- Over time, ERP systems evolved to include administrative, sales, marketing, and human resources processes. Companies now employ an enterprisewide approach to ERP that utilizes the Web and connects all facets of the value chain. (ERP II)
- The various functions of ERP II systems are now delivered as e-business suites. The major ERP vendors have developed modular, Web-enabled software suites that integrate ERP, customer relationship management, supply chain management, procurement, decision support, enterprise portals, and other business applications and functions.
- Examples are **Oracle's e-Business Suite** and **SAP's mySAP**. The goal of these systems is to enable companies to execute most of their business processes using a single Web-enabled system of integrated software rather than a variety of separate e-business applications.

Core ERP Modules

CORE ERP MODULES

Financial Management. These modules support accounting, financial reporting, performance management, and corporate governance. They manage accounting data and financial processes such as general ledger, accounts payable, accounts receivable, fixed assets, cash management and forecasting, product-cost accounting, cost-center accounting, asset accounting, tax accounting, credit management, budgeting, and asset management.

Operations Management. These modules manage the various aspects of production planning and execution such as demand forecasting, procurement, inventory management, materials purchasing, shipping, production planning, production scheduling, materials requirements planning, quality control, distribution, transportation, and plant and equipment maintenance.

Human Resource Management. These modules support personnel administration (including workforce planning, employee recruitment, assignment tracking, personnel planning and development, and performance management and reviews), time accounting, payroll, compensation, benefits accounting, and regulatory requirements.

EXTENDED ERP MODULES

Customer Relationship Management. (Discussed in detail in Chapter 11.) These modules support all aspects of a customer's relationship with the organization. They help the organization to increase customer loyalty and retention, and thus improve its profitability. They also provide an integrated view of customer data and interactions, helping organizations to be more responsive to customer needs.

Supply Chain Management. (Discussed in detail in Chapter 11.) These modules manage the information flows between and among stages in a supply chain to maximize supply chain efficiency and effectiveness. They help organizations plan, schedule, control, and optimize the supply chain from the acquisition of raw materials to the receipt of finished goods by customers.

Business Intelligence. (Discussed in detail in Chapter 12.) These modules collect information used throughout the organization, organize it, and apply analytical tools to assist managers with decision making.

E-Business. (Discussed in detail in Chapter 7.) Customers and suppliers demand access to ERP information including order status, inventory levels, and invoice reconciliation. Furthermore, they want this information in a simplified format that can be accessed via the Web. As a result, these modules provide two channels of access into ERP system information—one channel for customers (B2C) and one for suppliers and partners (B2B).

What are the benefits and limitations of ERP?

ERP systems can generate significant business benefits for an organization. The major benefits fall into the following categories:

- **Organizational flexibility and agility:** As you have seen, ERP systems break down many former departmental and functional silos of business processes, information systems, and information resources. In this way, they make organizations more flexible, agile, and adaptive. The organizations can therefore respond quickly to changing business conditions and 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, generating significant improvements in the quality of production, distribution, and customer service.

Despite all of their benefits, however, ERP systems *do have drawbacks*. The major limitations of ERP implementations include the following:

- The business processes in ERP software are often predefined by the best practices that the ERP vendor has developed. **Best practices** are the most successful solutions or problem-solving methods for achieving a business objective. As a result, companies may need to change their existing business processes to fit the predefined business processes incorporated into the ERP software. For companies with well-established procedures, this requirement can create serious problems, especially if employees do not want to abandon their old ways of working and therefore resist the changes.
- At the same time, however, an ERP implementation can provide an opportunity to improve and in some cases completely redesign inefficient, ineffective, or outdated procedures. In fact, many companies benefit from implementing best practices for their accounting, finance, and human resource processes, as well as other support activities that companies do not consider a source of competitive advantage.
- The different companies organize their value chains in different configurations to transform inputs into valuable outputs and achieve competitive advantage. Therefore, although they are appropriate for most organizations, they might not be the "best" one for your company if they change those processes that give you competitive advantage.
- ERP systems can be extremely complex, expensive, and time consuming to implement.
- The costs and risks of failure in implementing a new ERP system are substantial. *Quite a few companies have experienced costly ERP implementation failures.*
- In many cases, orders and shipments were lost, inventory changes were not recorded correctly, and unreliable inventory levels caused major stock outs.

Companies such as Hershey Foods, Nike, and Connecticut General sustained losses in amounts up to hundreds of millions of dollars. (implementation failures)

What are the are the major causes of ERP implementation failure?

The following are the major causes of ERP implementation failure:

- Failure to involve affected employees in the planning and development phases and in change management processes
- Trying to accomplish too much too fast in the conversion process
- Insufficient training in the new work tasks required by the ERP system
- The failure to perform proper data conversion
- No proper testing done for the new system

Describe the three main business processes supported by ERP systems.

- The **procurement process**, which originates in the warehouse department (need to buy) and ends in the accounting department (send payment).
- The **fulfillment process** that originates in the sales department (customer request to buy) and ends in the accounting department (receive payment).
- The **production process** that originates and ends in the warehouse department (need to produce and reception of finished goods), but involves the production department as well.

(the details of the steps in each of these processes)

What are the different methods of implementing ERP? OR

Compare and contrast on-premise software or software-as-a-service (SaaS) OR

Compare Vanilla, Custom and Best of breed approaches for On-premise implementations

Companies can implement ERP systems by using either **on-premise software or software-as-a-service (SaaS)**.

- **Software-as-a-Service ERP Implementation.** Companies can acquire ERP systems without having to buy a complete software solution (i.e., on-premise ERP implementation). Many organizations are utilizing software-as-a-service (SaaS).
- In this business model, the company rents the software from an ERP vendor who offers its products over the Internet using the SaaS model. The ERP cloud vendor manages software updates and is responsible for the system's security and availability.
- Cloud-based ERP systems can be a perfect fit for some companies. For instance, companies that cannot afford to make large investments in IT, yet already have relatively structured business processes that need to be tightly integrated, might benefit from cloud computing.

On-Premise ERP Implementation: Depending on the types of value chain processes managed by the ERP system and a company's specific value chain, there are **three strategic approaches to implementing an on-premise ERP system**:

1. **The vanilla approach:** In this approach, a company implements a **standard ERP package**, using the package's built-in configuration options. When the system is implemented in this way, it will deviate only minimally from the package's standardized settings. The vanilla approach can enable the company to perform the implementation more quickly. However, the extent to which the software is adapted to the organization's specific processes is limited.
 - Vanilla implementation provides general functions that can support the firm's common business processes with relative ease, even if they are not a perfect fit for those processes.
2. **The custom approach:** In this approach, a company implements a **more customized ERP system by developing new ERP functions designed specifically for that firm**. Decisions concerning the ERP's degree of customization are specific to each organization. To utilize the custom approach, the organization must carefully analyze its existing business processes to develop a system that conforms to the organization's particular characteristics and processes.
 - Customization is expensive and risky because computer code must be written and updated every time a new version of the ERP software is released. Going further, if the customization does not perfectly match the organization's needs, then the system can be very difficult to use.
3. **The best of breed approach:** This approach combines the benefits of the vanilla and customized systems while avoiding the extensive costs and risks associated with complete customization. Companies that adopt this approach mix and match core ERP modules as well as other extended ERP modules from different software providers to best fit their unique internal processes and value chains. Thus, a company may choose several core ERP modules from an established vendor to take advantage of industry best practices—for example, for financial management and human resource management. At the same time, it may also choose specialized software to support its unique business processes—for example, for manufacturing, warehousing, and distribution. Sometimes companies arrive at the best of breed approach the hard way.
 - For example, Dell wasted millions of dollars trying to customize an integrated ERP system from a major vendor to match its unique processes before it realized that a smaller, more flexible system that integrated well with other corporate applications was the answer.