Business Information Systems and Management Information Systems

LECTURE 7 & 8

How Businesses Use Information Systems

- **Information systems for business functions**
  - Business information systems; Ebusiness, Ecommerce, CRM, SCM, ERP.
- **Management decision support and intelligent systems**
  - Managers and decision making; Decision support systems, executive support systems, intelligent support system, and expert systems: components and functions; strategic and global information systems.

Business Processes

- Environmental factors and enterprise applications have forced businesses to examine their processes.
  - Manner in which work is organized, coordinated, and focused to produce a valuable product or service
  - Concrete work flows of material, information, and knowledge—sets of activities
- Information systems help organizations
  - Achieve great efficiencies by automating parts of processes
  - Rethink and streamline processes

Examples of Business Processes

- *Manufacturing and production*: Assembling product, checking quality, producing bills of materials
- *Sales and marketing*: Identifying customers, creating customer awareness, selling
- *Finance and accounting*: Paying creditors, creating financial statements, managing cash accounts
- *Human Resources*: Hiring employees, evaluating performance, enrolling employees in benefits plans

Examples of How IT Changes Business Processes

- **Renting a movie (transform)**
- **Downloading a music track (brand new)**
- **Ordering a book (brand new)**
- **Returning a rental car (transform)**
- **Tracking a package (brand new)**
- **Trading stocks (transform)**
- **Paying bills (transform)**
- **Developing a photograph (transform)**
- **Designing an airplane/car (transform)**
- **Registering for a class (transform)**
- **Capturing and sharing employee knowledge (new)**

Integrating Functions and Business Processes:

Cross-Functional Business Processes:

- Transcend boundary between sales, marketing, manufacturing, and research and development
- Group employees from different functional specialties to complete piece of work

Example: Order Fulfillment Process

The Order Fulfillment Process

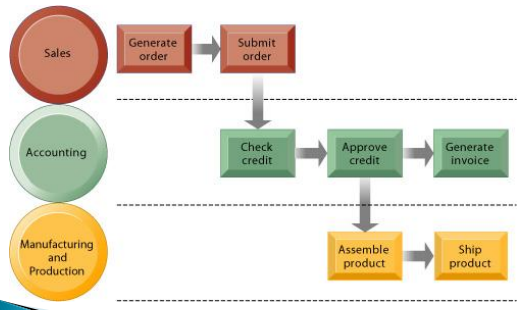


Figure 2-1

What Are Information Systems?

- An information system (IS) is a set of interrelated components working together to
  (1) facilitate operational functions and
  (2) support management decision making by producing information that enables managers to plan and control.
  - Components include hardware, software, data, people, and procedures
- An (IS) is an organizational and management solution based on information technology to a challenge posed by the environment
- Information technology (IT) includes computer hardware, software, storage technologies, and telecommunications/networks

Basic Functions of Information Systems

- Information systems engage in four basic activities in order to support operations and management decision making
  - Input
  - Processing
  - Output
    - Feedback for operations and decision making
    - Feedback on the performance of IS
  - Storage

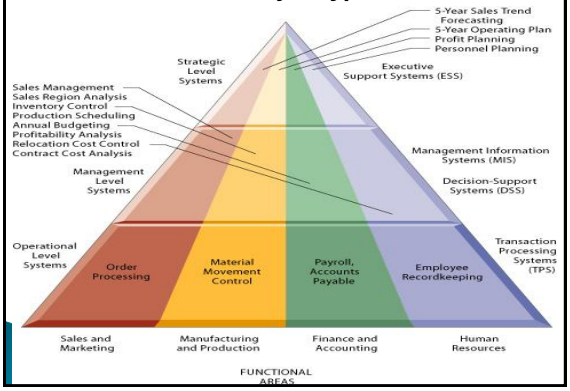
Major Types Of Information Systems In Organizations

- Transaction Processing Systems (TPS)
- Management Information Systems (MIS)
- Decision Support Systems (DSS)
- Executive Support Systems (ESS)

Ways to Organize Information Systems

- By the groups they serve
  - Operational level
  - Management level
  - Strategic level
- By functional area
  - Sales and marketing
  - Manufacturing and production
  - Finance and accounting
  - Human resources

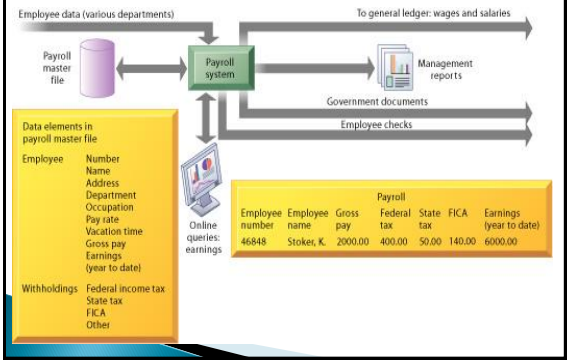
The Four Major Types of IS



Transaction Processing Systems (TPS)

- Basic business systems that serve the operational level
- A computerized system that facilitates daily routine transactions necessary to the conduct of the business and captures and stores data associated with the transaction

A Symbolic Representation for a Payroll TPS



Typical Applications of TPS

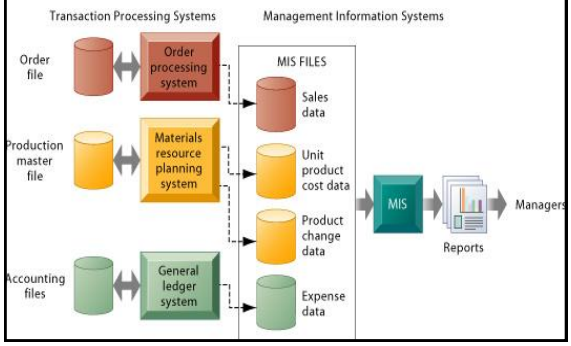
	TYPE OF TPS SYSTEM				
	Sales/ marketing systems	Manufacturing/ production systems	Finance/ accounting systems	Human resources systems	Other types (e.g., university)
Major functions of system	Customer service Sales management Promotion tracking Price changes Dealer communications	Scheduling Purchasing Shipping/receiving Operations	General ledger Billing Cost accounting	Personnel records Benefits Compensation Labor relations Training	Admissions Grade records Course records Alumni records
Major application systems	Sales order information system Sales commission system Sales support system	Machine control systems Purchase order systems Quality control systems	General ledger Payroll Accounts receivable/payable Funds management systems	Employee records Benefit systems Employee skills inventory	Registration system Student transcript system Curriculum class control systems Alumni benefactor system

Management Information System (MIS)

MIS serve the management level of the organization, providing managers with reports and online access to the organization's current performance and historical records.

- Inputs: High-volume data
- Processing: Simple models
- Outputs: Summary reports
- Users: Middle managers,
  Example: Annual budgeting

Management Information Systems (MIS) (continued)



Management Information Systems (MIS) (continued)

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2005

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
	TOTAL		18,559,253	17,700,000	1.05

A sample MIS report

Characteristics of Management Information System (MIS)

- Structured and semi-structured decisions
- Report control oriented
- Past and present data
- Internal orientation
- Lengthy design process

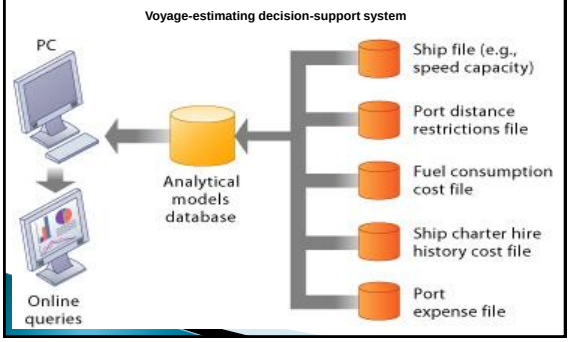
Decision Support System (DSS)

DSS serve the management level and help managers make decision that are unique, rapidly changing, and not easily specified in advance (use of mathematical models)

- Inputs: Low-volume data
- Processing: Interactive (e.g., what-if analysis), data-mining, OLAP
- Outputs: Decision analysis
- Users: Professionals, staff

Example: Contract cost analysis

Decision-Support Systems (DSS) (Continued)



Executive Support System (ESS)

ESS support strategic level managers to help make decisions that are non-routine requiring judgment, evaluation, and insight.

- Inputs: Aggregate data
- Processing: Interactive
- Outputs: Projections
- Users: Senior managers

Example: 5-year operating plan

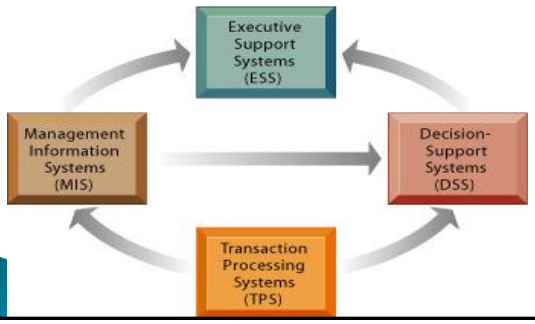
Executive Support System (ESS)

- Top level management
- Designed to the individual
- Ties CEO to all levels
- Very expensive to keep up
- Extensive support staff

Interrelationships Among Systems

- TPS are typically a major source of data for other systems: MIS are sources for DSS and ESS: DSS is a source for ESS
- Sometimes a single system serves many purposes
- In contemporary digital firms, the different types of systems are closely linked to one another. This is the ideal. In traditional firms these systems tend to be isolated from one another, and information does not flow seamlessly from one end of the organization to the other. Efficiency and business value tend to suffer greatly in these traditional firms.

Relationship of Systems to One Another



Organizing Systems By Functional Area

- Sales and marketing
- Manufacturing and production
- Finance and accounting
- Human resources

Sales and Marketing Systems

Major functions of systems:

- Sales management, market research, promotion, pricing, new products

Major application systems:

- Sales order info system, market research system, pricing system

Sales and Marketing Systems

SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
Order processing	Enter, process, and track orders	Operational
Pricing analysis	Determine prices for products and services	Management
Sales trend forecasting	Prepare 5-year sales forecasts	Strategic

Manufacturing and Production Systems

Major functions of systems:

- Scheduling, purchasing, shipping, receiving, engineering, operations

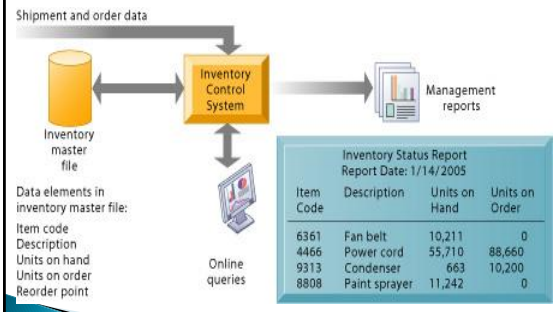
Major application systems:

- Materials resource planning systems, purchase order control systems, engineering systems, quality control systems, Enterprise Resource Planning

Manufacturing and Production Systems

SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
Machine control	Control the actions of machines and equipment	Operational
Production planning	Decide when and how many products should be produced	Management
Facilities location	Decide where to locate new production facilities	Strategic

Overview of an Inventory System



Financing and Accounting Systems

Major functions of systems:

- Budgeting, general ledger, billing, cost accounting

Major application systems:

- General ledger, accounts receivable, accounts payable, budgeting, funds management systems

Financing & Accounting Systems (Continued)

SYSTEM	DESCRIPTION	ORGANIZATION-AL LEVEL
Accounts receivable	Tracks money owed the firm	Operational
Budgeting	Prepares short-term budgets	Management
Profit planning	Plans long-term profits	Strategic

Human Resource Systems

Major functions of systems:

- Personnel records, benefits, compensation, labor relations, training

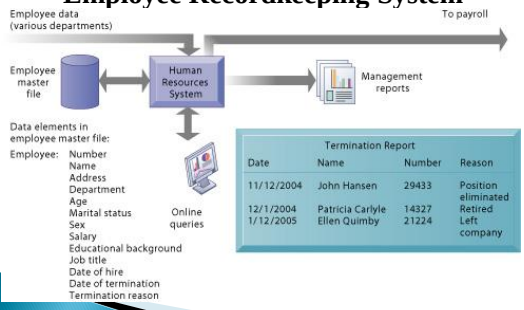
Major application systems:

- Payroll, employee records, benefit systems, career path systems, personnel training systems

Human Resource Systems (Continued)

SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
Training and development	Tracks employee training, skills, and performance appraisals	Operational
Compensation analysis	Monitors the range and distribution of employee wages, salaries, and benefits	Management
Human resources planning	Plans the long-term labor force needs of the organization	Strategic

Human Resource Systems (Continued) An Employee Recordkeeping System



Organizational Challenges

- E-commerce, e-business, and global competition force companies to bring products to market faster, improve customer service, and execute processes more efficiently.
- These objectives require integrated information from different functional areas, levels of management, and coordination with business partners (e.g., customers and suppliers).
- Solution
  - Enterprise applications that coordinate, activities, and knowledge across intra- and inter- firm boundaries
  - Interorganizational systems that automate information flows across organizational boundaries (an inter-firm system)

Systems for Enterprise-Wide Process Integration

Enterprise applications:

- Designed to support organization-wide process coordination and integration
- Examples of such systems
  - Enterprise Resource Planning systems (ERP)
  - Supply chain management systems (SCM)
  - Customer relationship management systems (CRM)
  - Knowledge management systems

The Internet

- The Internet is a worldwide network of computer links.
- Today links number of hosts in tens of millions, the number of users in the hundreds of millions, and the number of countries participating over 200.
- The number of connections to the Internet continues to grow exponentially.
- The Internet has made possible for individuals/organisations that are geographically dispersed to communicate and conduct business.

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Reasons for seeking international markets

(i) Creation of new Markets
(ii) Due to preferential trading arrangements
(iii) Obtain greater profits
(iv) Due to faster growing foreign markets
(v) To acquire products for the domestic market
(vi) To use foreign production to lower costs
(vii) To guarantee supply of raw materials

Teleconferencing, Data conferencing and Videoconferencing:

- Teleconferencing allows a group of people to confer simultaneously via telephone or via electronic-mail groups communications software.
- Teleconferencing that includes the ability of two or more people at distant locations to work on the same document or data simultaneously is data conferencing.
- Teleconferencing in which participants see each other over video screens is termed videoconferencing.

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Ecommerce:

- Purchase and sale of goods and services over the Internet WWW where most elements of the transactions would be done electronically.
- Ecommerce supports complete seller-to- buyer relationships that include
  - Promoting and communicating company and product information to a global user base
  - Accepting orders and payments for goods and services online

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- Ecommerce cntd:
  - Delivering software and information products online - physical goods are transported in the conventional ways
  - Provide ongoing customer support
  - Engages in online collaboration for product development
  - Ideally, ecommerce is fairly the same in process as conventional commerce except that information is processed and handled electronically.
    - An important technology for Ecommerce is electronic data interchange (EDI).

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EDI:

- EDI is the direct computer-to-computer exchange (between two organizations) of standard transaction documents such as invoices, bills of lading, or purchase orders.
- EDI lowers transaction costs because transactions can be automatically transmitted from one information system to another through a telecommunications network - eliminating the printing and handling of paper at one end and the inputting of data at the other.

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Issues in E-Commerce

A number of issues/fears arise with the use of ecommerce and they include:

- Creating customers and maintaining a good relationship with them
- Maintaining an easy and smooth flow of goods and information
- Handling of dissatisfaction with goods and services
- Authenticity of seller etc.
- International issues that arise relating to legal, tax, and privacy concerns

How can these issues be resolved?

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Advantages of Ecommerce

- Round the clock operations
- global reach extension
- low cost of acquiring, serving and retaining customers
- ease of building an extended enterprise
- disintermediation as customers and suppliers can be reached directly
- improved customer service
- power for providing the best of both the worlds – traditional business with the Internet tools
- customer control of interactions at website
- firm knowledge of customer behaviour at websites and their wants for customization reasons etc

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Disadvantages of Ecommerce

- newness and rapidly developing pace of underlying technologies that make it difficult for end-users to understand them so as to use easily
- security assurance problem
- difficulty of inspecting goods that are not within the physical reach of the buyer

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