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
An information system (IS) is a set of interrelated components working together to:
1. Facilitate operational functions
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
**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

**Typical Applications of TPS**

**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
**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 decisions 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)**

- Voyage-estimating decision-support system

**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

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>DESCRIPTION</th>
<th>ORGANIZATIONAL LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order processing</td>
<td>Enter, process, and track orders</td>
<td>Operational</td>
</tr>
<tr>
<td>Pricing analysis</td>
<td>Determine prices for products and services</td>
<td>Management</td>
</tr>
<tr>
<td>Sales trend forecasting</td>
<td>Prepare 5-year sales forecasts</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>DESCRIPTION</th>
<th>ORGANIZATIONAL LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine control</td>
<td>Control the actions of machines and equipment</td>
<td>Operational</td>
</tr>
<tr>
<td>Production planning</td>
<td>Decide when and how many products should be produced</td>
<td>Management</td>
</tr>
<tr>
<td>Facilities location</td>
<td>Decide where to locate new production facilities</td>
<td>Strategic</td>
</tr>
</tbody>
</table>
### Overview of an Inventory System

- **Inventory Control System**
- **Management reports**
- **Inventory Status Report**
  - **Report Date:** 1/14/2005
  - **Item Code**
  - **Description**
  - **Units on Hand**
  - **Units on Order**

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Description</th>
<th>Units on Hand</th>
<th>Units on Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>6981</td>
<td>Fan belt</td>
<td>10211</td>
<td>0</td>
</tr>
<tr>
<td>4465</td>
<td>Power cord</td>
<td>55,710</td>
<td>88,660</td>
</tr>
<tr>
<td>9133</td>
<td>Condenser</td>
<td>863</td>
<td>10,200</td>
</tr>
<tr>
<td>8808</td>
<td>Paint sprayer</td>
<td>11,242</td>
<td>0</td>
</tr>
</tbody>
</table>

### 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)

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Organizational Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts receivable</td>
<td>Tracks money owed the firm</td>
<td>Operational</td>
</tr>
<tr>
<td>Budgeting</td>
<td>Prepares short-term budgets</td>
<td>Management</td>
</tr>
<tr>
<td>Profit planning</td>
<td>Plans long-term profits</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

### 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)

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Organizational Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and development</td>
<td>Tracks employee training, skills, and performance appraisals</td>
<td>Operational</td>
</tr>
<tr>
<td>Compensation analysis</td>
<td>Monitors the range and distribution of employee wages, salaries, and benefits</td>
<td>Management</td>
</tr>
<tr>
<td>Human resource planning</td>
<td>Plans the long-term labor force needs of the organization</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

### Human Resource Systems (Continued) An Employee Recordkeeping System

- **Employee data**
- **Employee number**
- **Address**
- **Age**
- **Marital status**
- **Sex**
- **Salary**
- **Educational background**
- **Date of hire**
- **Date of termination**
- **Termination reason**

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Number</th>
<th>Reason</th>
<th>Position eliminated</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/12/2014</td>
<td>John Smith</td>
<td>22553</td>
<td></td>
<td>Resigned</td>
<td></td>
</tr>
<tr>
<td>12/1/2008</td>
<td>Patricia Lee</td>
<td>14212</td>
<td></td>
<td>Resigned</td>
<td></td>
</tr>
<tr>
<td>1/15/2010</td>
<td>Ellen Davis</td>
<td>21124</td>
<td></td>
<td>Resigned</td>
<td></td>
</tr>
</tbody>
</table>
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)

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.

Reasons for seeking international markets

- Creation of new Markets
- Due to preferential trading arrangements
- Obtain greater profits
- Due to faster growing foreign markets
- To acquire products for the domestic market
- To use foreign production to lower costs
- 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.

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
● 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).

● 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.

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?

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

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