Figure IT 7eU The Business Performance Management Cycle and IT Model

- Where Do We Want to Go? Mission, Goals, Objectives
- How Can We improve Performance? Solutions, Critical Responses
- How Well Are We Doing? Monitoring, Performance, Comparing
- How Shall We Get There? Strategy, Plans

Information Technology IT
Chapter Outline

1. Information Systems: Concepts and Definitions
2. Classification and Types of Information Systems
3. How IT Supports People
4. How IT Supports Supply Chains and Business Processes
5. Information Systems Infrastructure, Architecture, and Emerging Computing Environments
6. Innovative and Futuristic Information Systems
7. Managerial Issues
2.1 Information Systems: Concepts and Definitions
The relationship among data, information, & knowledge.
2.2 Classification and Types of Information Systems
Figure 2.2

Figure 2.2 Levels of information systems.
<table>
<thead>
<tr>
<th>Table 2.1</th>
<th>Routine Business Transactions in a Manufacturing Company</th>
</tr>
</thead>
</table>
| Payroll and personnel | Employee time cards  
Employee pay and deductions  
Payroll checks  
Fringe benefits |
| Purchasing | Purchase orders  
Deliveries  
Payments (accounts payable) |
| Finance and accounting | Financial statements  
Tax records  
Expense accounts |
| Sales | Sales records  
Invoices and billings  
Accounts receivable  
Sales returns  
Shipping |
| Production | Production reports  
Quality control reports |
| Inventory management | Material usage  
Inventory levels |
Figure 2.3 – Functional information systems.
Figure 2.5 – Business processes across & beyond the enterprise.
Departmental, enterprise, and interorganizational information systems.
<table>
<thead>
<tr>
<th><strong>System</strong></th>
<th><strong>Employees supported</strong></th>
<th><strong>Description</strong></th>
<th><strong>Detailed description in:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Management information system (MIS)</td>
<td>Middle managers</td>
<td>Provides routine information for planning, organizing, and controlling operations in functional areas</td>
<td>Chapter 9</td>
</tr>
<tr>
<td>Office automation system (OAS)</td>
<td>Office workers</td>
<td>Increases productivity of office workers; includes word processing</td>
<td>Chapters 4, 9</td>
</tr>
<tr>
<td>CAD/CAM</td>
<td>Engineers, draftspersons</td>
<td>Allows engineers to design and test prototypes; transfers specifications to manufacturing facilities</td>
<td>Chapter 9</td>
</tr>
<tr>
<td>Communication and collaboration systems</td>
<td>All employees</td>
<td>Enables employees, partners, and customers to interact and work together more efficiently</td>
<td>Chapters 4, 8</td>
</tr>
<tr>
<td>Desktop publishing system</td>
<td>Office workers</td>
<td>Combines text, photos, graphics to produce professional-quality documents</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>Document management system (DMS)</td>
<td>Office workers</td>
<td>Automates flow of electronic documents</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>Decision support system (DSS)</td>
<td>Decision makers, managers</td>
<td>Combines models and data to solve semistructured problems with extensive user involvement</td>
<td>Chapter 12</td>
</tr>
<tr>
<td>Group support system, groupware</td>
<td>People working in groups</td>
<td>Supports working processes of groups of people (including those in different locations)</td>
<td>Chapters 4, 12</td>
</tr>
<tr>
<td>Expert system (ES)</td>
<td>Knowledge workers, nonexperts</td>
<td>Provides stored knowledge of experts to nonexperts; provides decision recommendations based on built-in expertise</td>
<td>Chapter 12</td>
</tr>
<tr>
<td>Knowledge management system (KM)</td>
<td>Managers, knowledge workers</td>
<td>Supports the gathering, organizing, and use of an organization’s knowledge</td>
<td>Chapters 10</td>
</tr>
<tr>
<td>Data and text mining</td>
<td>Knowledge workers, professionals</td>
<td>Enables learning from historical cases, even with vague or incomplete information</td>
<td>Chapters 3, 12</td>
</tr>
<tr>
<td>Business intelligence</td>
<td>Decision makers, managers, knowledge workers</td>
<td>Gathers and uses large amounts of data for analysis by business analytics and intelligent systems</td>
<td>Chapters 3, 12</td>
</tr>
<tr>
<td>Mobile computing systems</td>
<td>Mobile employees</td>
<td>Support employees who work with customers or business partners outside the physical boundaries of the organization</td>
<td>Chapter 7</td>
</tr>
<tr>
<td>Automated decision support (ADS)</td>
<td>Frontline employees, middle managers</td>
<td>Supports customer care employees and salespeople who need to make quick, real-time decisions involving small dollar amounts</td>
<td>Chapter 12</td>
</tr>
</tbody>
</table>
Interrelated support systems. The TPS collects information that is used to build the MIS and the data warehouse. These feed the BI and other enterprise systems.
2.3 How IT Supports People
<table>
<thead>
<tr>
<th>Task</th>
<th>MIS support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical summaries</td>
<td>Summaries of new data (e.g., daily production by item, monthly electricity usage)</td>
</tr>
<tr>
<td>Exception reports</td>
<td>Comparison of actual performances to standards (or target). Highlight only deviations from a threshold (e.g., above or below 5%)</td>
</tr>
<tr>
<td>Periodic reports</td>
<td>Generated at predetermined intervals</td>
</tr>
<tr>
<td>Ad-hoc reports</td>
<td>Generated as needed, on demand. These can be routine reports or special ones</td>
</tr>
<tr>
<td>Comparative analysis and early detection of problems</td>
<td>Comparison of performance to metrics or standards. Includes analysis such as trends and early detection of changes</td>
</tr>
<tr>
<td>Projections, forecasting</td>
<td>Projection of future sales, cash flows, market share, trend analysis, etc.</td>
</tr>
<tr>
<td>Automation of routine decisions</td>
<td>Standard modeling techniques applied to routine decisions such as when and how much to order or how to schedule work</td>
</tr>
<tr>
<td>Connection and collaboration</td>
<td>Internal and external Web-based messaging systems, e-mail, voice mail, and groupware (see Chapter 4)</td>
</tr>
</tbody>
</table>
Figure 2.9 – The information systems support of people in organizations.
2.4 How IT Supports Supply Chains and Business Processes
How IT Supports Supply Chains and Business Processes

• Internal Supply Chain
• Upstream Supply Chain
• Downstream Supply Chain
• Managing Supply Chain
• Industry Specific Systems
• E-commerce Business Model
• Supporting Online Search
• Supporting Social Networking
2.5 Information Systems Infrastructure, Architecture, and Emerging Computing Environments
Information Systems Infrastructure

- Infrastructure
- IT Architecture
- Web-based Systems
  - E-commerce
  - E-markets
Information Systems Infrastructure . . .

• Emerging Computing Environments
  – Service Oriented Architecture
  – Software as Service or Utility
  – Grid Computing
  – Cloud Computing
  – Pervasive computing (embedded in things not computers)
  – Open Source
  – Virtualization (pooling of resources)
2.6 Innovative and Futuristic Information Systems
Innovative and Futuristic Information Systems

• Mobile Office
• Intelligent Traffic Control Systems
• Predictive Analysis
• The NRI Model (Nomura Research Institute)
Figure 2.11
Features of information systems in 2010.

- Vast number of network devices
  - Sensing
  - Enormous amount of data and information
  - Decision making
  - Intelligence
  - Analyzing models
- Creating models
  - Creating real-world models and systems
  - Modifying models
- Providing support for making business forecasts and decisions
- Personalizing and automating services
- Establishing the ubiquity of services
- Responding to energy savings, welfare and environmental problems
2.7 Managerial Issues
Managerial Issues

• Transition to digital enterprise may be lengthy & with lots of opposition to the needed change.
• How to deal with outsourcing & utility computing trends.
• Ethical issues.
• Risk of introducing new technologies.
• Importance of supply chain management.
• Importance of business intelligence.
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