Chapter 1

Managing the Digital Firm
Objectives

1. What is the role of information systems in today’s competitive business environment?

2. What exactly is an information system? What do managers need to know about information systems?

3. How are information systems transforming organizations and management?
Objectives

4. How have the Internet and Internet technology transformed business and government?

5. What are the major management challenges to building and using information systems?
1. Design competitive and effective systems.

2. Understand system requirements of global business environment.

3. Create information architecture that supports organization’s goal.
4. Determine business value of information systems.

5. Design systems people can control, understand and use in a socially, ethically responsible manner.
Chapter 1 Case Study

Globalization and Information Systems

Anna (USA) buys a T-shirt from Penney Web site

JCPenny (USA) receives the order and fwd to TAL’s IS

TAL (Hong Kong) ships the ordered item to JCPenny

TAL forecasts inventory levels and directs manufacturer (Taiwan) to produce them
Four powerful worldwide changes that have altered the business environment:

1. Globalization
2. Rise of the Information Economy
3. Transformation of the Business Enterprise
4. Emergence of the Digital Firm
Globalization

- Management and control in a global marketplace
- Competition in world markets
- Global workgroups
- Global delivery systems
Rise of the Information Economy

- Knowledge- and information-based economies
- New products and services
- Knowledge: a central productive and strategic asset
- Time-based competition
- Shorter product life
- Turbulent environment
- Limited employee knowledge base
The growth of the information economy


Figure 1-1
The Competitive Business Environment and the Emerging Digital Firm

Transformation of the Business Enterprise

- Flattening
- Decentralization
- Flexibility
- Location independence
- Low transaction and coordination costs
- Mass-customized products and services
- Empowerment
- Collaborative work and teamwork
Why Information Systems?

Information technology capital investment 1980-2003

Emergence of the Digital Firm

- Digitally enabled relationships with customers, suppliers, and employees
- Core business processes accomplished via networks
- Digital management of key corporate assets
- Rapid sensing and responding to environmental changes
What Is an Information System?

A set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization.
Data: Streams of raw facts representing events such as business transactions

Information: Clusters of data that are meaningful and useful to human beings
Why Information Systems?

Data and information

Data

331 Brite Dish Soap 1.29
863 BL Hill Coffee 4.69
173 Meow Cat .79
331 Brite Dish Soap 1.29
663 Cntry Ham 3.29
524 Fiery Mustard 1.49
113 Ginger Root .85
331 Brite Dish Soap 1.29

Information

Sales Region: Northwest
Store: Superstore #122

ITEM NO.
331

DESCRIPTION
Brite Dish Soap

UNITS SOLD
7156

YTD SALES
$9,231.24

Figure 1-3
Functions of an information system

**Figure 1-4**
Formal Systems

- Fixed definitions of data and procedures for collecting, storing, processing, disseminating, and using these data
- Can be computer-based or manual

Computer-based Information Systems

- Use computer hardware and software to process and disseminate information
Chapter 1 Case Study

IS in UPS

UPS driver brings package

Handheld computer (DIAD) transmits delivery info

Sender can track shipment status online

Sender can track shipment status online

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Window on Technology

UPS Competes Globally with Information Technology

- What are the inputs, processing, and outputs of UPS’s package tracking system?
- What technologies are used?
- How are these technologies related to UPS’s business strategy? How do they provide value for the company?
- What would happen if these technologies were not available?
The business information value chain

**Figure 1-5**
Information systems are more than computers.
A Business Perspective on Information Systems

- **Information systems literacy**: Broad-based understanding of information systems that includes behavioral knowledge about organizations and individuals using information systems and technical knowledge about computers.

- **Computer literacy**: Knowledge about information technology, focusing on understanding how computer-based technologies work.
A Business Perspective on Information Systems

Major Business Functions

- Sales and marketing
- Manufacturing
- Finance
- Accounting
- Human resources
A Business Perspective on Information Systems

Key Elements of an Organization

- People
- Structure
- Operating Procedures
- Politics
- Culture
Management Levels

- Senior managers: make long-range strategic decisions about products and services
- Middle managers: carry out the programs and plans of senior management
- Operational managers: monitor the firm’s daily activities
A Business Perspective on Information Systems

Information Technology (IT) Infrastructure

- Computer hardware
- Computer software
- Storage technology
- Communications technology
Why Information Systems?

A Business Perspective on Information Systems

Complementary Assets

- Assets required to derive value from a primary investment
- Can be organizational, managerial, or social assets
- Technology investments supported by investment in complementary assets receive superior returns
Why Information Systems?

Variation in returns on information technology investment

Figure 1-7

A Business Perspective on Information Systems

Organizational Assets

- Supportive organizational culture valuing efficiency and effectiveness
- Efficient business processes
- Decentralized authority
- Distributed decision-making rights
- Strong IS development team
Managerial Assets

- Strong senior management support for technology investment and change
- Incentives for management innovation
- Teamwork and collaborative work environments
- Management training programs
- Management culture valuing flexibility and knowledge-based decision making
A Business Perspective on Information Systems

Social Assets

- The Internet and telecommunications infrastructure
- IT-enriched educational programs
- Governmental and private-sector standards
- Laws and regulations creating fair, stable market environments
- Technology and service firms in adjacent markets to assist implementation
Social Assets

- Technical approach: emphasizes mathematically based models, physical technology, and formal capabilities of systems

- Behavioral approach: studies issues arising from development and maintenance of systems, such as business integration and utilization
Contemporary approaches to information systems

Figure 1-8
Sociotechnical Systems

- Management Information Systems (MIS)
- System performance optimized when technology and organization adjust to each other for a satisfactory fit
A sociotechnical perspective on information systems

Figure 1-9
The interdependence between organizations and information systems

Figure 1-10
Toward the Digital Firm

The Widening Scope of Information Systems

- 1950s: Technical changes
- 1960s-70s: Managerial controls
- 1980s-90s: Institutional core activities
- Today: Digital information webs extending beyond the enterprise
The widening scope of information systems

Figure 1-11
The Network Revolution and the Internet

The Internet

- International network of networks
- Universal technology platform: Any computer can communicate with any other computer
- World Wide Web and Web sites
What You Can Do on the Internet

- Communicate and collaborate
- Access information
- Participate in discussions
- Supply information
- Find entertainment
- Exchange business transactions
New Options for Organizational Design:
The Digital Firm and the Collaborative Enterprise

- Flattening organizations
- Separating work from location
- Reorganizing workflows
- Increasing flexibility
- Redefining organizational boundaries
Toward the Digital Firm

Flattening organizations

Figure 1-12

A traditional hierarchical organization with many levels of management

An organization that has been "flattened" by removing layers of management
Redesigned workflow for insurance underwriting

**Figure 1-13**

**Paper system insurance application**
- 11 clerical steps
- 6 professional steps
- Total = 33 days

**Imaging system insurance application: New streamlined work flow**
- 3 clerical steps
- 4 professional steps
- Total = 5 days
The Digital Firm

- Electronic commerce
- Electronic business
- Digital market: Information system that links buyers and sellers to exchange information, products, services, payments
Electronic business and electronic commerce in the emerging digital firm

**Figure 1-14**
The Digital Firm

- **Electronic Commerce (e-commerce):** buying and selling goods and services electronically

- **Electronic Business:** executing all the firm’s business processes with Internet technology

- **Intranet:** private, secure business network based on Internet technology

- **Extranet:** extension of intranet to authorized external users
Positive Impacts of Information Systems

- Faster calculations and paperwork
- Analysis of customer purchase patterns and preferences
- More efficient business services
- Medical advances
- Instant global distribution of information
Negative Impacts of Information Systems

- Automation leading to job elimination
- Privacy concerns
- System outages and shutdowns
- Health problems, repetitive stress injury
- Illegal distribution of intellectual property