Information Systems in Global Business Today


Learning Objectives (1/2)

- Understanding the effects of information systems on business and their relationship to globalization.

- Explain why information systems are so essential in business today.

- Define an information system and describe its management, organization, and technology components.

Learning Objectives (2/2)

- Define complementary assets and explain how they ensure that information systems provide genuine value to an organization.

- Describe the different academic disciplines used to study information systems and explain how each contributes to our understanding of them.

- Explain what is meant by a sociotechnical systems perspective.

The Role of Information Systems in Business Today (1/11)

- How information systems are transforming business
  - Increase in wireless technology use, Web sites
  - Shifts in media and advertising
  - New federal security and accounting laws

- Globalization opportunities
  - Internet has drastically reduced costs of operating on global scale
  - Presents both challenges and opportunities
Information Technology Capital Investment

Figure 1-1


In the emerging, fully digital firm
- Significant business relationships are digitally enabled and mediated
- Core business processes are accomplished through digital networks
- Key corporate assets are managed digitally

Digital firms offer greater flexibility in organization and management
- Time shifting, space shifting

Growing interdependence between ability to use information technology and ability to implement corporate strategies and achieve corporate goals

Business firms invest heavily in information systems to achieve six strategic business objectives:
- Operational excellence
- New products, services, and business models
- Customer and supplier intimacy
- Improved decision making
- Competitive advantage
- Survival

Operational excellence:
- Improvement of efficiency to attain higher profitability
- Information systems, technology an important tool in achieving greater efficiency and productivity
- Wal-Mart’s RetailLink system links suppliers to stores for superior replenishment system
New products, services, and business models:
- Business model: describes how company produces, delivers, and sells product or service to create wealth
- Information systems and technology a major enabling tool for new products, services, business models
  - Examples: Apple’s iPod, iTunes, and iPhone, Netflix’s Internet-based DVD rentals

Customer and supplier intimacy:
- Serving customers well leads to customers returning, which raises revenues and profits
  - Example: High-end hotels that use computers to track customer preferences and use to monitor and customize environment
- Intimacy with suppliers allows them to provide vital inputs, which lowers costs
  - Example: J.C.Penney’s information system which links sales records to contract manufacturer

Improved decision making
- Without accurate information:
  - Managers must use forecasts, best guesses, luck
  - Leads to:
    - Overproduction, underproduction of goods and services
    - Misallocation of resources
    - Poor response times
  - Poor outcomes raise costs, lose customers
- Example: Verizon’s Web-based digital dashboard to provide managers with real-time data on customer complaints, network performance, line outages, etc.

Competitive advantage
- Delivering better performance
- Charging less for superior products
- Responding to customers and suppliers in real time
- Example: Toyota and TPS (Toyota Production System) enjoy a considerable advantage over competitors – information systems are critical to the implementation of TPS
**The Role of Information Systems in Business Today (10/11)**

- **Survival**
  - Information technologies as necessity of business
- **May be:**
  - Industry-level changes, e.g. Citibank’s introduction of ATMs
  - Governmental regulations requiring record-keeping
    - Examples: Toxic Substances Control Act, Sarbanes-Oxley Act

**What is an Information System (1/6)**

- **Information system:**
  - Set of interrelated components
  - Collect, process, store, and distribute information
  - Support decision making, coordination, and control

**The Role of Information Systems in Business Today (11/11)**

The Interdependence Between Organizations and Information Technology

- Business Strategic Objectives
- Business Processes
- Business Firm

- Information System
- Software
- Hardware
- Data Management
- Telecommunications

**What is an Information System (2/6)**

- **Information vs. data**
  - Data are streams of raw facts
  - Information is data shaped into meaningful form

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**Figure 1-2**

**Figure 1-3**

Raw data from a supermarket checkout counter can be processed and organized to produce meaningful information, such as the total unit sales of dish detergent or the total sales revenue from dish detergent for a specific store or sales territory.
Information system: Three activities produce information organizations need

- **Input:** Captures raw data from organization or external environment
- **Processing:** Converts raw data into meaningful form
- **Output:** Transfers processed information to people or activities that use it

Feedback: Output returned to appropriate members of organization to help evaluate or correct input stage

Computer/Computer program vs. information system

- Computers and software are technical foundation and tools, similar to the material and tools used to build a house
Dimensions of Information Systems (1/5)

- Organizational dimension of information systems
  - Hierarchy of authority, responsibility
    - Senior management
    - Middle management
    - Operational management
    - Knowledge workers
    - Data workers
    - Production or service workers

Dimensions of Information Systems (3/5)

- Organizational dimension of information systems (cont.)
  - Separation of business functions
    - Sales and marketing
    - Human resources
    - Finance and accounting
    - Manufacturing and production
  - Unique business processes
  - Unique business culture
  - Organizational politics

Dimensions of Information Systems (2/5)

Levels in a Firm

- Senior Management
- Middle Management
  - Scientists and knowledge workers
- Operational Management
  - Production and service workers
  - Data Workers

Business organizations are hierarchies consisting of three principal levels: senior management, middle management, and operational management. Information systems serve each of these levels. Scientists and knowledge workers often work with middle management.

Figure 1-6

Dimensions of Information Systems (4/5)

- Management dimension of information systems
  - Managers set organizational strategy for responding to business challenges
  - In addition, managers must act creatively:
    - Creation of new products and services
    - Occasionally re-creating the organization
Dimensions of Information Systems (5/5)

- Technology dimension of information systems
  - Computer hardware and software
  - Data management technology
  - Networking and telecommunications technology
    - Networks, the Internet, intranets and extranets, World Wide Web
  - IT infrastructure: provides platform that system is built on

Business Perspective on Information Systems (2/3)

- Business information value chain
  - Raw data acquired and transformed through stages that add value to that information
  - Value of information system determined in part by extent to which it leads to better decisions, greater efficiency, and higher profits

- Business perspective: Calls attention to organizational and managerial nature of information systems

Business Perspective on Information Systems (1/3)

- Business perspective on information systems:
  - Information system is instrument for creating value
  - Investments in information technology will result in superior returns:
    - Productivity increases
    - Revenue increases
    - Superior long-term strategic positioning

Business Perspective on Information Systems (3/3)

**The Business Information Value Chain**

- From a business perspective, information systems are part of a series of value-adding activities for acquiring, transforming, and distributing information that managers can use to improve decision making, enhance organizational performance, and, ultimately, increase firm profitability.
Although, on average, investments in information technology produce returns far above those returned by other investments, there is considerable variation across firms.

Investing in information technology does not guarantee good returns.

Considerable variation in the returns firms receive from systems investments.

Factors:
- Adopting the right business model
- Investing in complementary assets (organizational and management capital)

Complementary assets:
- Assets required to derive value from a primary investment
- Firms supporting technology investments with investment in complementary assets receive superior returns
- E.g.: invest in technology and the people to make it work properly

Complementary assets include:
- Organizational investments, e.g.
  - Appropriate business model
  - Efficient business processes
- Managerial investments, e.g.
  - Incentives for management innovation
  - Teamwork and collaborative work environments
- Social investments, e.g.
  - The Internet and telecommunications infrastructure
  - Technology standards
The study of information systems deals with issues and insights contributed from technical and behavioral disciplines.

**Technical approach**
- Emphasizes mathematically based models
- Computer science, management science, operations research

**Behavioral approach**
- Behavioral issues (strategic business integration, implementation, etc.)
- Psychology, economics, sociology

**Management Information Systems**
- Combines computer science, management science, operations research and practical orientation with behavioral issues

**Four main actors**
- Suppliers of hardware and software
- Business firms
- Managers and employees
- Firm’s environment (legal, social, cultural context)

**Approach of this book: Sociotechnical view**
- Optimal organizational performance achieved by jointly optimizing both social and technical systems used in production
- Helps avoid purely technological approach
In a sociotechnical perspective, the performance of a system is optimized when both the technology and the organization mutually adjust to one another until a satisfactory fit is obtained.

Figure 1-10