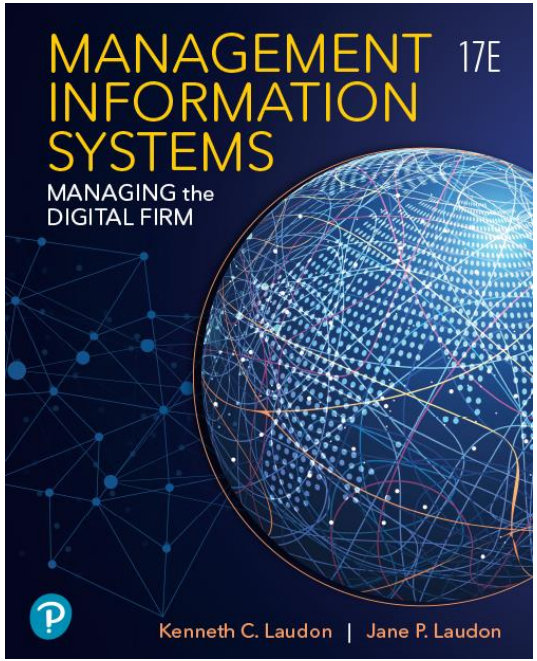
Management Information Systems: Managing the Digital Firm

Seventeenth Edition



Chapter 1

Information Systems in Global Business Today

Learning Objectives

1.1 How are information systems transforming business, and why are they so essential for running and managing a business today?

1.2 What is an information system? How does it work? What are its management, organization, and technology components? Why are complementary assets essential for ensuring that information systems provide genuine value for organizations?

1.3 What academic disciplines are used to study information systems, and how does each contribute to an understanding of information systems?

1.4 How will MIS help my career?

Video Cases

- Case 1: Business in the Cloud: Facebook, Google, and eBay Data Centers
- Case 2: UPS Global Operations with the DIAD and Worldport
- Instructional Video: Tour IBM's Raleigh Data Center

Smart Stores Reinvent the Retail Space (1 of 2)

- Business Challenges
  - Mounting competition from online retailers
  - Take advantage of opportunities provided by new technology
- Solutions
  - Acrelec system helps stores manage curbside pickup
  - AWM Smart Shelf enables retailers to view and track products in real-time; helps shoppers locate products using mobile devices; personalizes shopper experiences
  - AWM Frictionless enables low-contact cashierless checkout

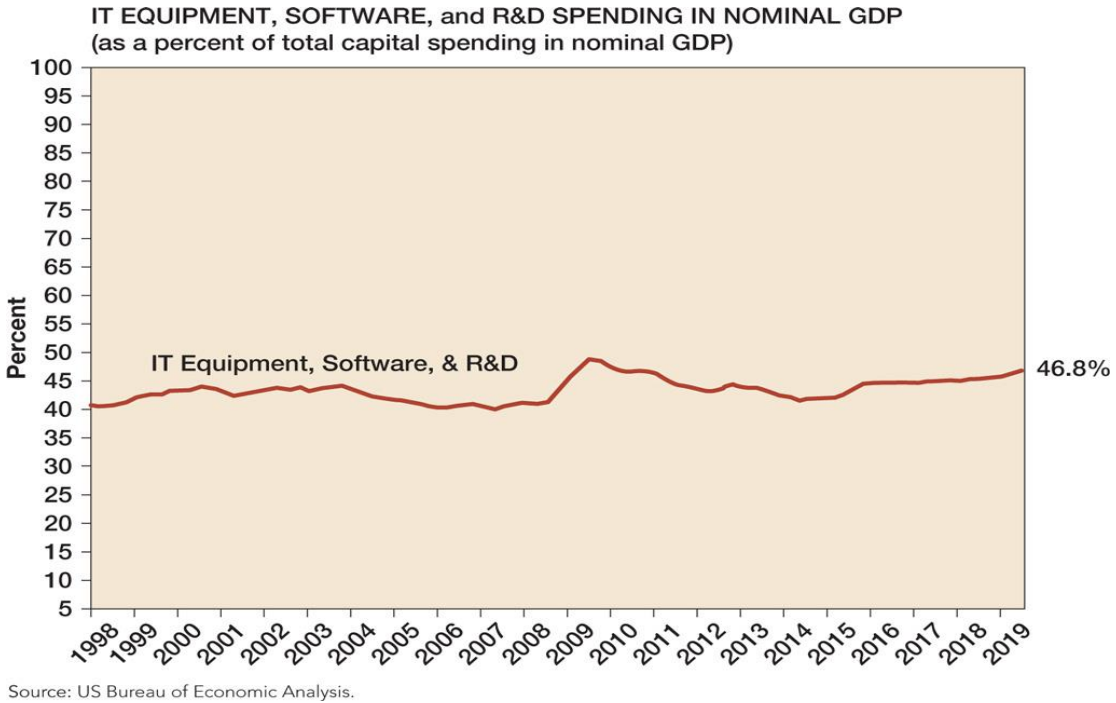
Smart Stores Reinvent the Retail Space (2 of 2)

- Illustrates how brick-and-mortar retail stores are using information technology to compete more effectively against online retailers
- Demonstrates IT's role in driving business operations and management decisions
- Illustrates how deploying new technology requires companies to redesign jobs and procedures, changing how companies run their businesses

How Information Systems Are Transforming Business

- Global spending on information technology (IT) and IT services: nearly $3.8 trillion in 2019; $160 billion spent on management consulting and services
- Organizational, management, and cultural changes are often required for firms to derive full business value from IT investments

Figure 1.1 Information Technology Capital Investment



Source: US Bureau of Economic Analysis.

What's New in Management Information Systems (1 of 3)

- IT Innovations
  - Cloud computing, big data, Internet of Things
  - Mobile digital platform
  - AI and machine learning
  - Use of social networks for business objectives
- New Business Models
  - Online streaming and downloadable video
    - Examples: Netflix, Apple TV Channels, Amazon

What's New in Management Information Systems (2 of 3)

- E-commerce Expansion
  - E-commerce worldwide expands to nearly $3.6 trillion in 2019
  - Growth in social commerce spurred by growth of mobile platform
  - Mobile retail e-commerce growing more than 20 percent a year, reaching almost $300 billion in 2020
- Management Changes
  - Managers becoming more mobile
  - Managers use social networks, collaboration tools
  - Business intelligence applications accelerate

What's New in Management Information Systems (3 of 3)

- Firms and Organizations Change
  - More collaborative, less emphasis on hierarchy and structure
  - Greater emphasis on competencies and skills
  - Higher-speed/more accurate decision making based on data and analysis
  - More willingness to interact with consumers (social media)
  - Better understanding of the importance of IT

Interactive Session: Management: Will the Coronavirus Pandemic Make Working from Home the New Normal? (1 of 2)

- Class Discussion
  - Define the problem described in this case. What are the management, organization, and technology issues raised by this problem?
  - Identify the information technologies used to provide a solution to this problem. Was this a successful solution? Why or why not?

Interactive Session: Management: Will the Coronavirus Pandemic Make Working from Home the New Normal? (2 of 2)

- Class Discussion
  - Will working from home become the dominant way of working in the future? Why or why not?.

Globalization Challenges and Opportunities: A Flattened World

- Internet and global communications have greatly changed how and where business is done
  - Drastic reduction of costs of operating and transacting on global scale
  - Competition for jobs, markets, resources, ideas
  - Growing interdependence of global economies
  - Requires new understandings of skills, markets, opportunities

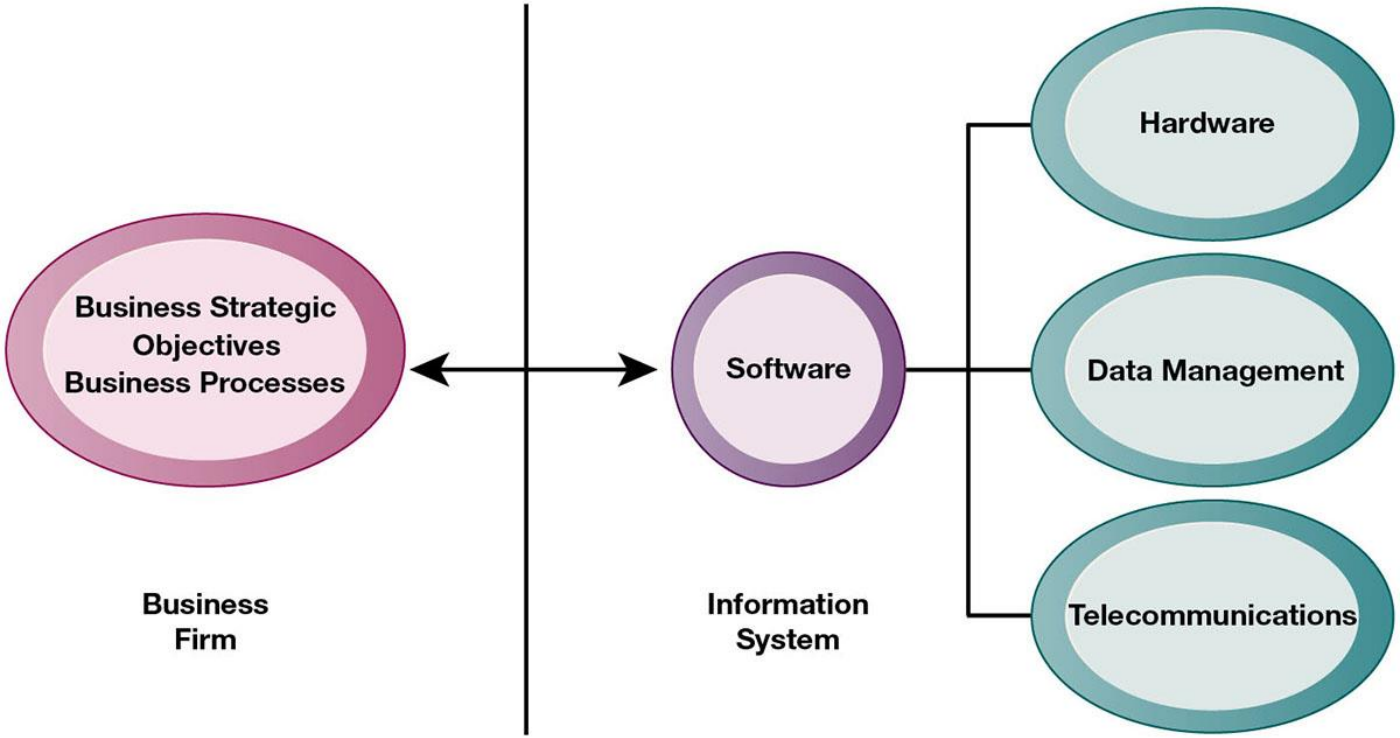
The Emerging Digital Firm

- In a 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

Strategic Business Objectives of Information Systems (1 of 2)

- Growing interdependence between:
  - Ability to use information technology
  - Ability to implement corporate strategies and achieve corporate goals

Figure 1.2 The Interdependence Between Organizations and Information Systems



Strategic Business Objectives of Information Systems (2 of 2)

- Firms invest heavily in information systems to achieve six strategic business objectives:
  1. Operational excellence
  2. New products, services, and business models
  3. Customer and supplier intimacy
  4. Improved decision making
  5. Competitive advantage
  6. Survival

Operational Excellence

- Improved efficiency results in higher profits
- Information systems and technologies help improve efficiency and productivity
- Example: Walmart
  - Power of combining information systems and best business practices to achieve operational efficiency—and over $524 billion in sales in 2019
  - Most efficient retail store in world as result of digital links between suppliers and stores

New Products, Services, and Business Models

- Information systems and technologies enable firms to create new products, services, and business models
- Business model: how a company produces, delivers, and sells its products and services
- Example: Apple
  - Transformed old model of music distribution with iTunes
  - Constant innovations—iPod, iPhone, iPad, etc.

Customer and Supplier Intimacy

- Customers who are served well become repeat customers who purchase more
  - Example: Mandarin Oriental Hotel
  - Uses IT to foster an intimate relationship with its customers, keeping track of preferences, etc.
- Close relationships with suppliers result in lower costs
  - Examples: Mandarin Oriental Hotel and JC Penney (in text)
  - JC Penney uses IT to enhance relationship with supplier in Hong Kong

Improved Decision Making

- Without accurate information, managers must use forecasts, best guesses, and luck, resulting in misallocation of resources, inventory, employees
- Real-time data improves ability of managers to make decisions
  - Example: Verizon's web-based digital dashboard to provide managers with real-time data on customer complaints, network performance, line outages, etc.

Competitive Advantage

- Often results from achieving previous business objectives
- Advantages over competitors
  - Charging less for superior products, better performance, and better response to suppliers and customers
  - Examples: Apple, Walmart, UPS are industry leaders because they know how to use information systems for this purpose

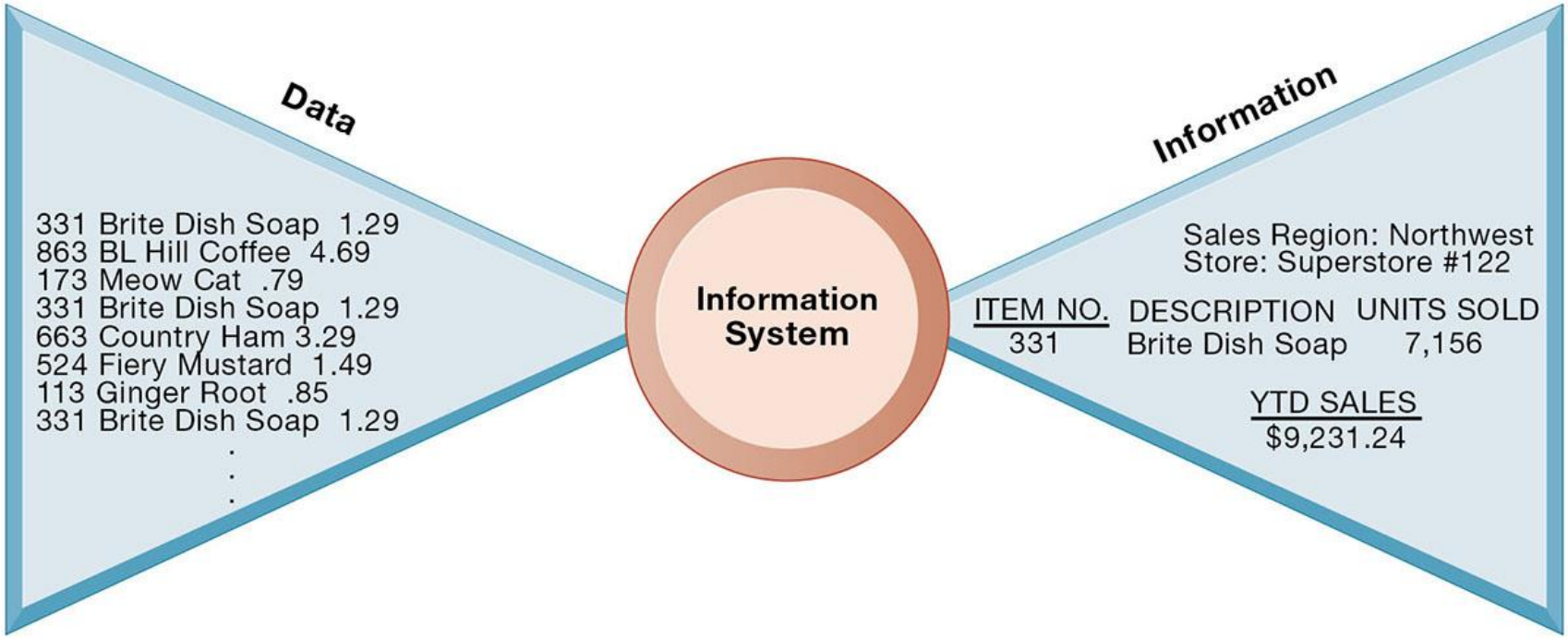
Survival

- Businesses may need to invest in information systems out of necessity; it is simply the cost of doing business
- Keeping up with competitors
  - Citibank's introduction of ATMs
- Federal and state regulations and reporting requirements
  - Toxic Substances Control Act and the Sarbanes-Oxley Act

What Is an Information System? (1 of 3)

- Information technology: the hardware and software a business uses to achieve objectives
- Information system: interrelated components that manage information to:
  - Support decision making and control
  - Help with analysis, visualization, and product creation
- Data: streams of raw facts
- Information: data shaped into meaningful, useful form

Figure 1.3 Data and Information



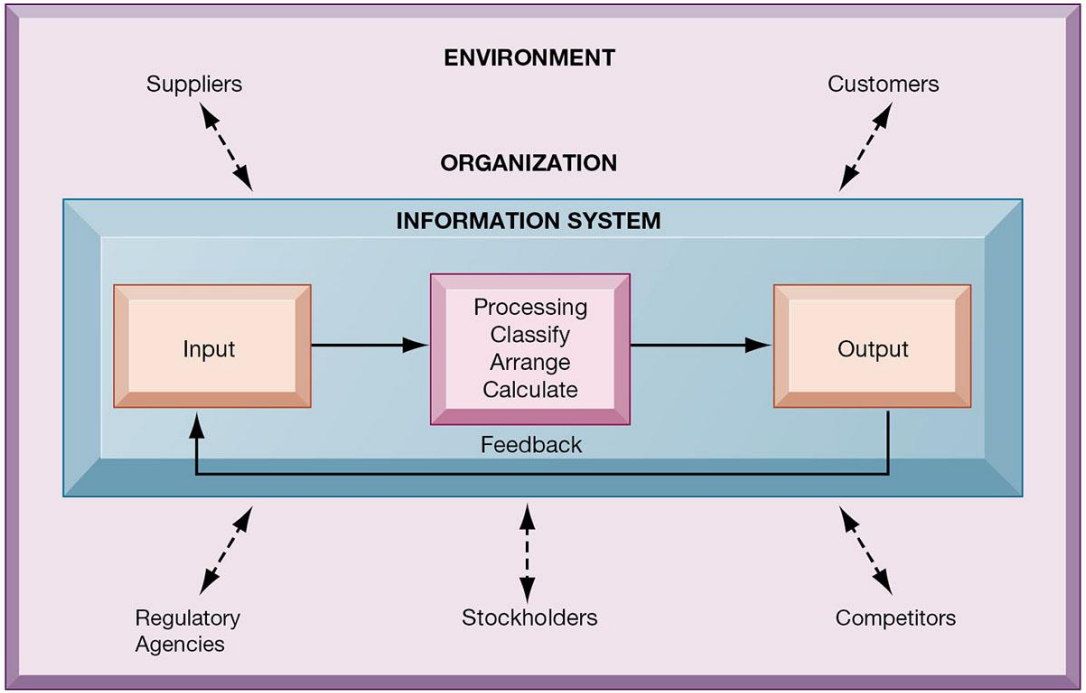
What Is an Information System? (2 of 3)

- Activities in an information system that produce information:
  - Input
  - Processing
  - Output
  - Feedback
- Sharp distinction between computer or computer program versus information system

What is an Information System? (3 of 3)

- Feedback
  - Output is 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

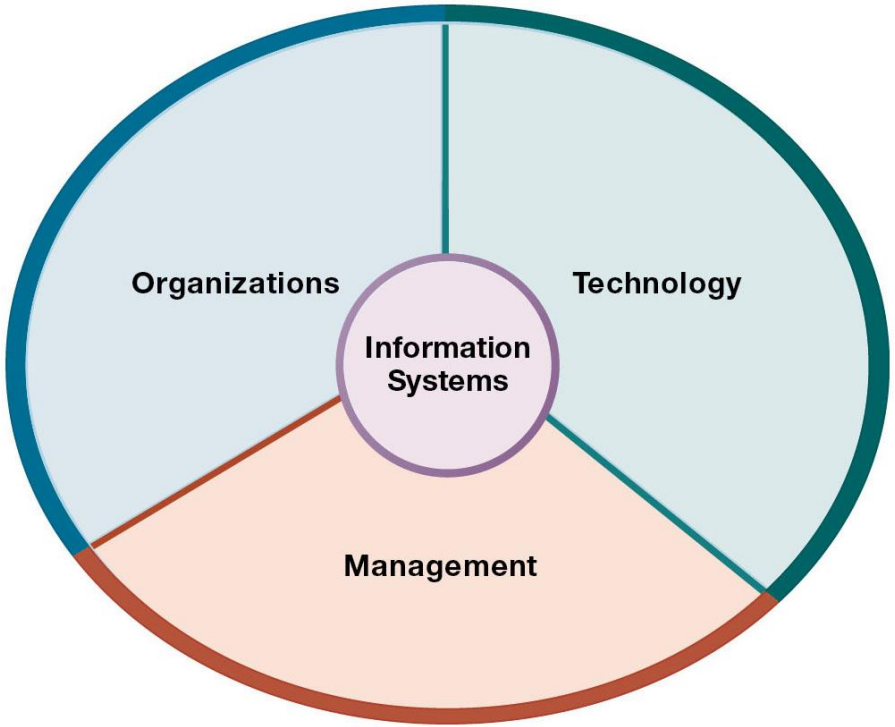
Figure 1.4 Functions of an Information System



Dimensions of Information Systems

- Organizations
- Management
- Technology

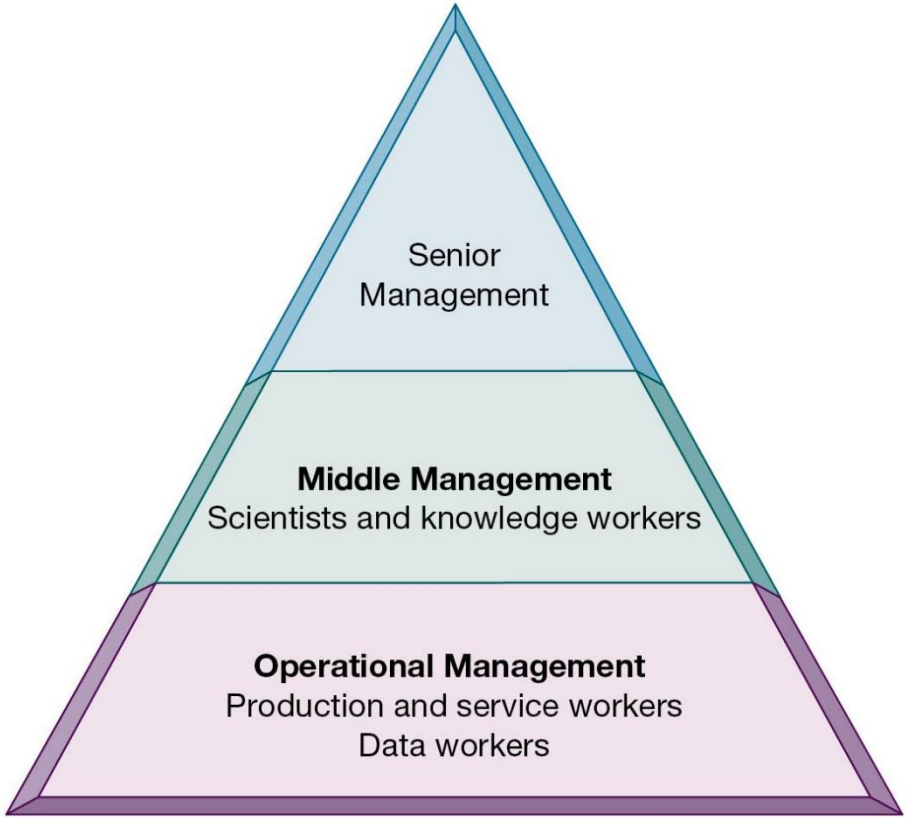
Figure 1.5 Information Systems Are More Than Computers



Dimensions of Information Systems: Organizations (1 of 2)

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

Figure 1.6 Levels in a Firm



Dimensions of Information Systems: Organizations (2 of 2)

- 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: Management

- 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: Information Technology

- 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

Interactive Session: Technology: UPS Competes Globally with Information Technology

- Class Discussion
  - What are the inputs, processing, and outputs of UPS's package tracking system?
  - What technologies are used by UPS? How are these technologies related to UPS's business strategy?
  - What strategic business objectives do UPS's information systems address?
  - What would happen if UPS's information systems were not available?

Dimensions of UPS Tracking System

- Organizational
  - Procedures for tracking packages and managing inventory and provide information
- Management
  - Monitoring service levels and costs
- Technology
  - Handheld computers, bar-code scanners, networks, desktop computers, and so on

It Isn't Just Technology: A Business Perspective on Information Systems (1 of 3)

- Information system is instrument for creating value
- Investments in information technology should result in superior returns
  - Productivity increases
  - Revenue increases
  - Superior long-term strategic positioning

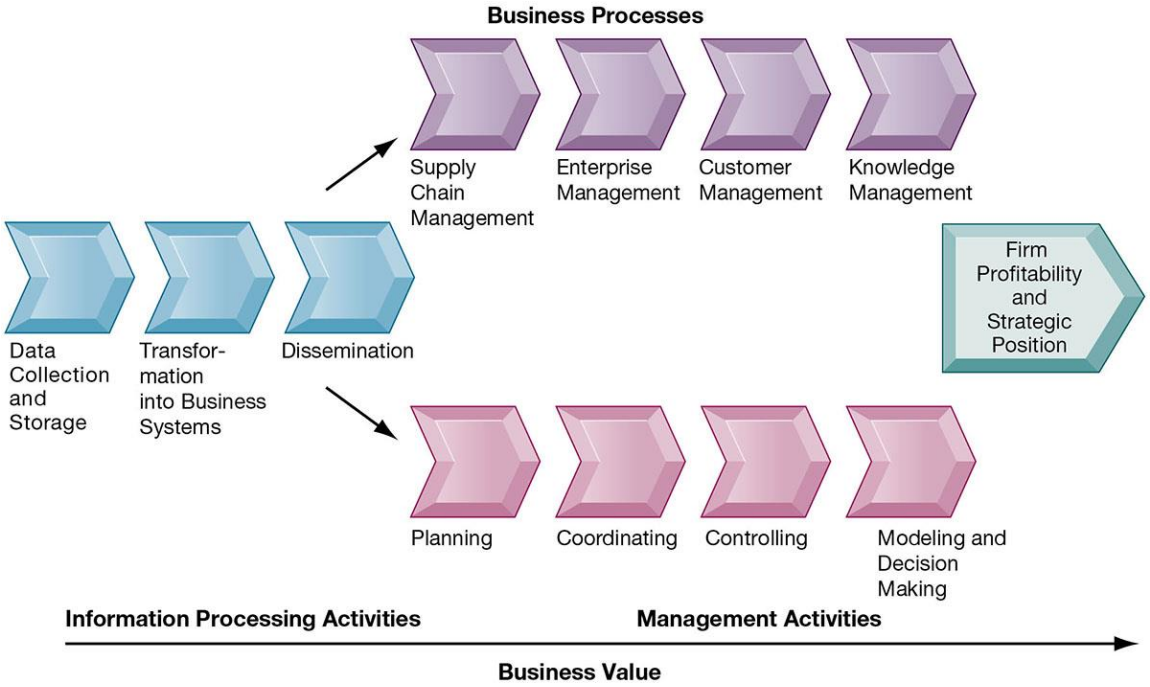
It Isn't Just Technology: A Business Perspective on Information Systems (2 of 3)

- 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

It Isn't Just Technology: A Business Perspective on Information Systems (3 of 3)

- Investing in information technology does not guarantee good returns
- There is considerable variation in the returns firms receive from systems investments
- Factors
  - Adopting the right business model
  - Investing in complementary assets (organizational and management capital)

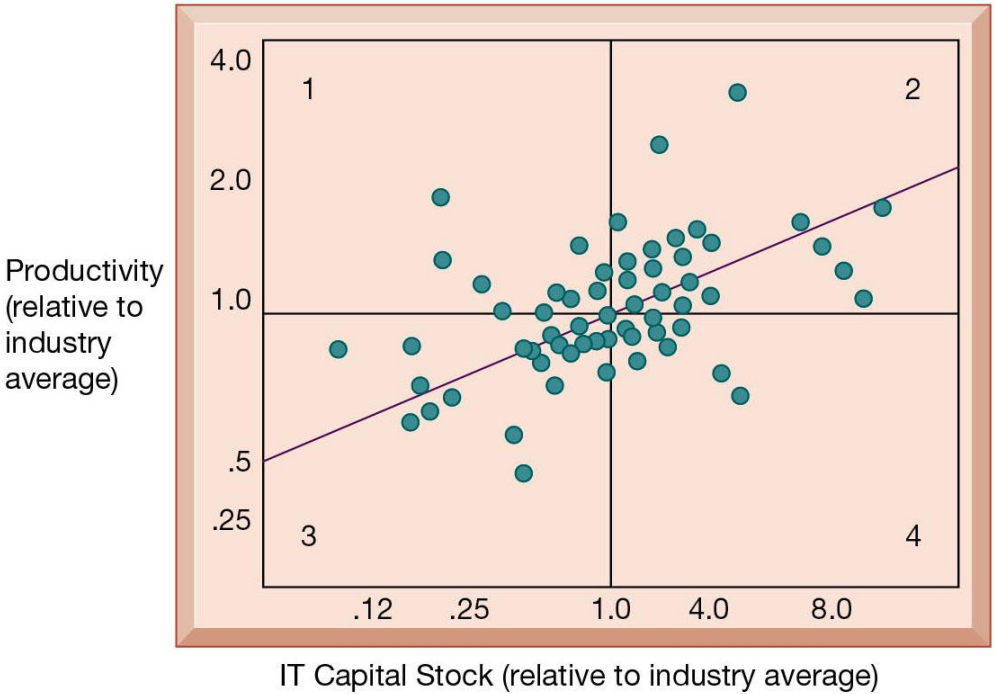
Figure 1.7 The Business Information Value Chain



Complementary Assets: Organizational Capital and the Right Business Model (1 of 2)

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

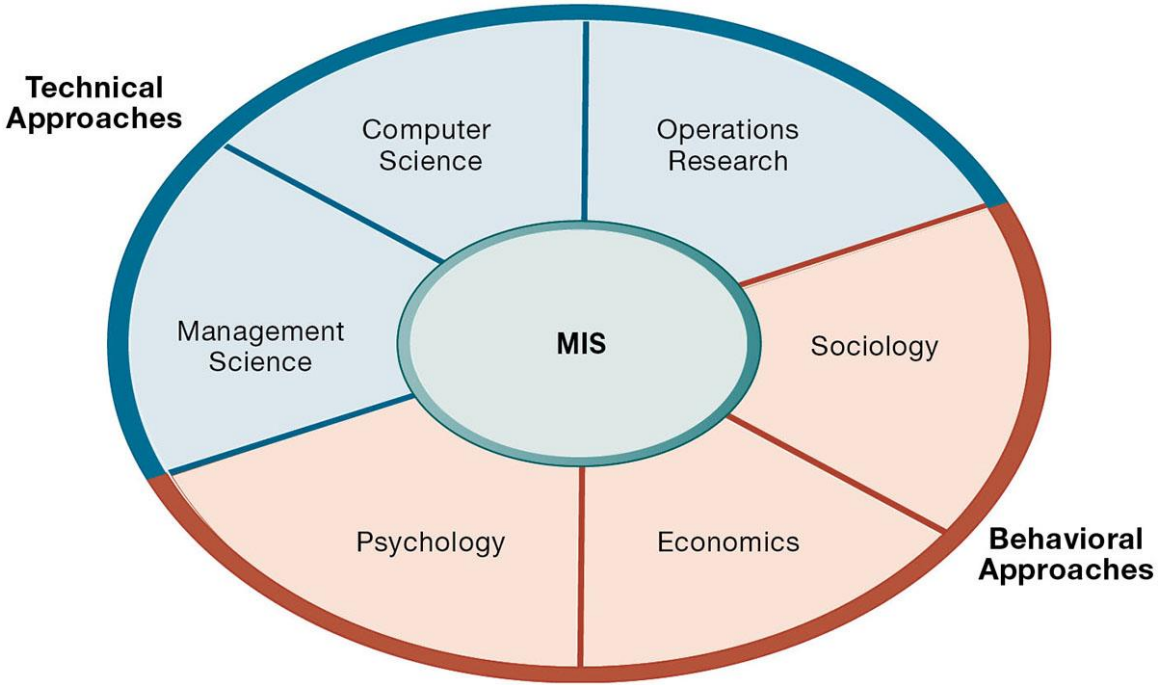
Figure 1.8 Variation in Returns on Information Technology Investment



Complementary Assets: Organizational Capital and the Right Business Model (2 of 2)

- Complementary assets
  - Examples of organizational assets
    - Appropriate business model
    - Efficient business processes
  - Examples of managerial assets
    - Incentives for management innovation
    - Teamwork and collaborative work environments
  - Examples of social assets
    - The Internet and telecommunications infrastructure
    - Technology standards

Figure 1.9 Contemporary Approaches to Information Systems



Technical Approach

- Emphasizes mathematically based models
- Computer science, management science, operations research

Behavioral Approach

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

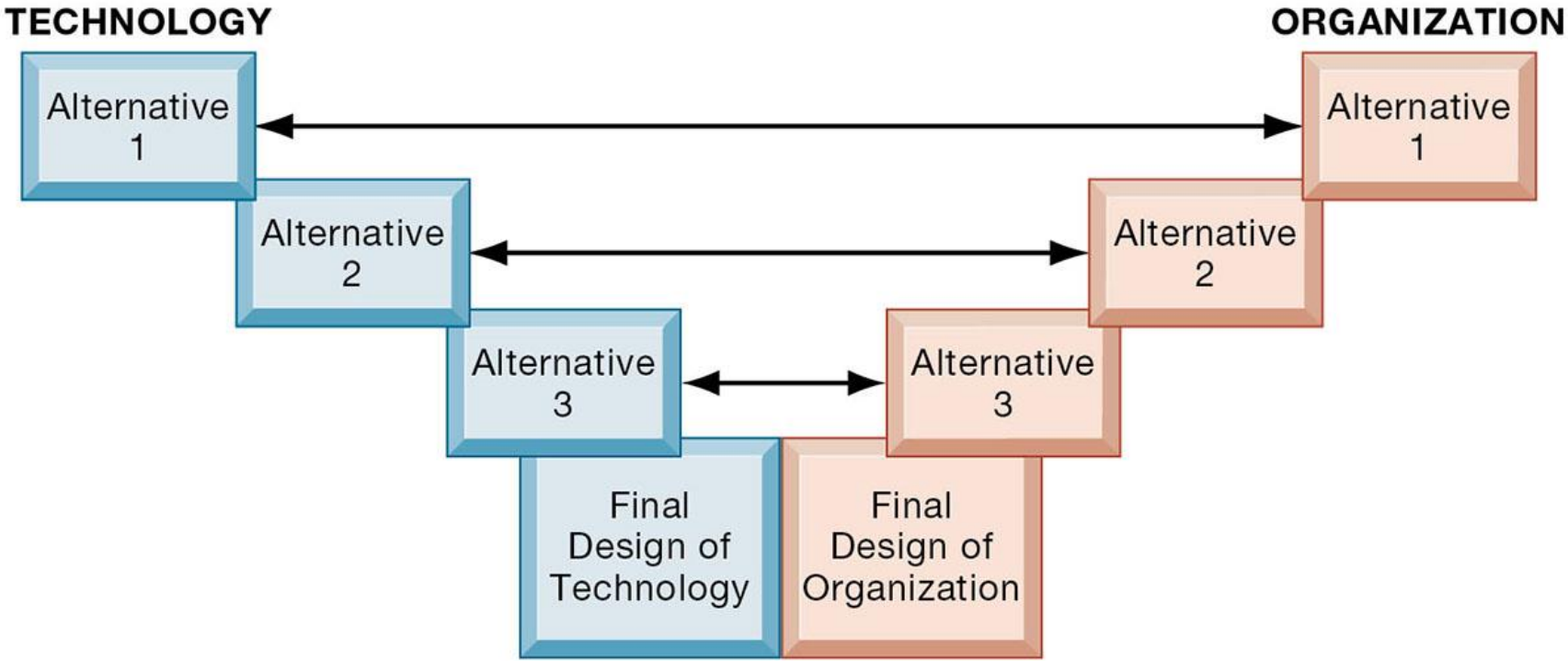
Approach of This Text: Sociotechnical Systems (1 of 2)

- Management information systems
  - Combine 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 Text: Sociotechnical Systems (2 of 2)

- Sociotechnical view
  - Optimal organizational performance achieved by jointly optimizing both social and technical systems used in production
  - Helps avoid purely technological approach

Figure 1.10 A Sociotechnical Perspective on Information Systems



How Will MIS Help My Career?

- The Company: Power Financial Analytics Data Services
- Position: Financial client support and sales assistant
- Job Requirements
- Interview Questions
- Author Tips

Copyright