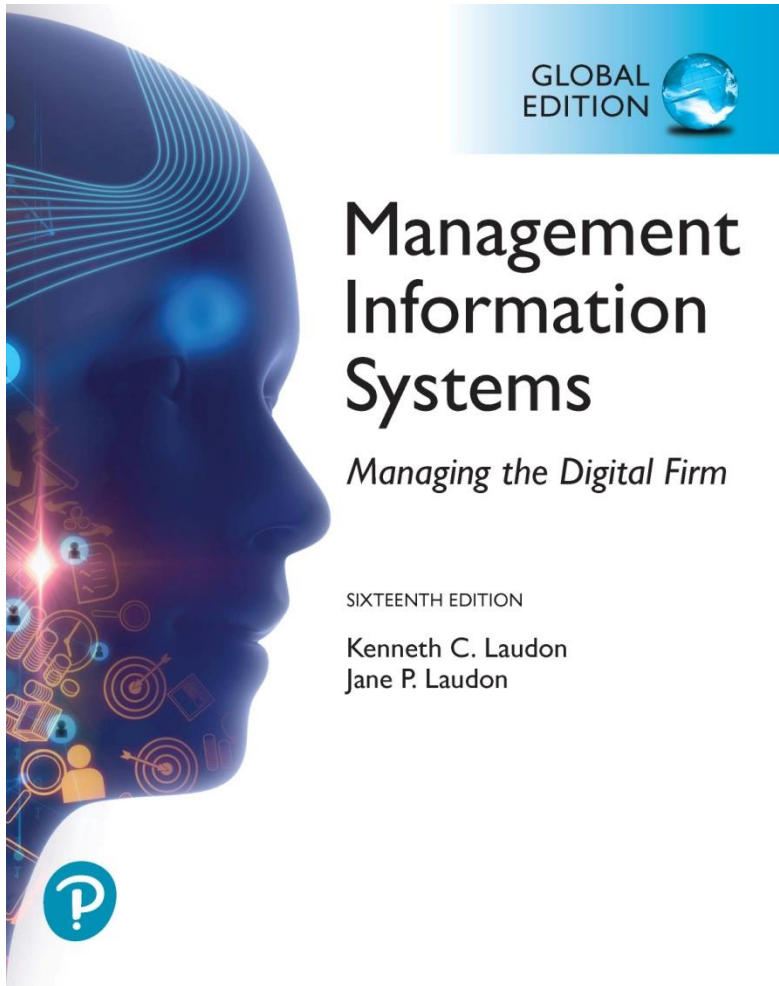


# Management Information Systems: Managing the Digital Firm

Sixteenth Edition • Global 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?

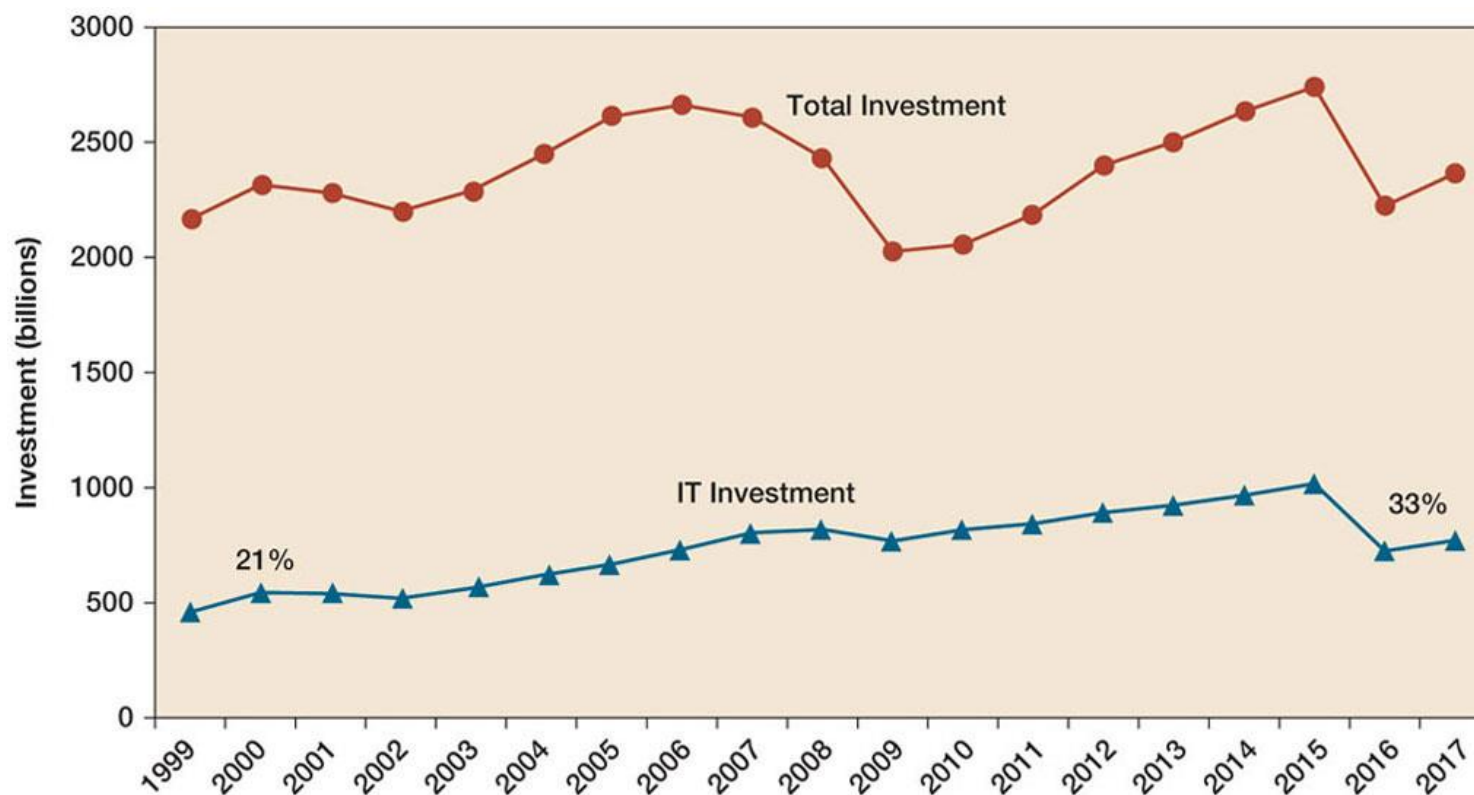
# How Information Systems Are Transforming Business (1 of 2)

- By June 2018, more than **160 million** businesses worldwide had **dot-com** Internet sites registered
- In 2018 1.8 billion Internet users purchased online, generating **\$2.9 billion**
- Facebook attracted more than **2 billion monthly visitors** worldwide

# How Information Systems Are Transforming Business (2 of 2)

- Social networking tools being used by businesses to connect employees, customers, and managers
- Internet advertising continues to grow at more than 20 % per year
- New laws require businesses to store more data for longer periods
- Changes in business result in changes in jobs and careers

# Figure 1.1 Information Technology Capital Investment



# 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
- **New Business Models**
  - Online streaming music and video
  - On-demand e-commerce services

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

- E-commerce Expansion

- E-commerce expands to nearly \$1 trillion in 2018
- Netflix now has more than 125 million US subscribers
- Online services now approach online retail in revenue
- Online mobile advertising now larger than desktop

- Management Changes

- Managers use social networks, collaboration tools
- Business intelligence applications accelerate
- Virtual meetings proliferate

# 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: Can You Run the Company with Your iPhone? (1 of 2)

- Discussion
  - What kinds of applications are described here? What business functions do they support? How do they improve operational efficiency and decision making?
  - Identify the problems that the business in this case study solved by using mobile digital devices.



# Interactive Session: Management: Can You Run the Company with Your iPhone? (2 of 2)

- Discussion
  - What kinds of businesses are most likely to benefit from equipping their employees with mobile digital devices such as iPhones and iPads?
  - One company deploying iPhones has stated, “The iPhone is not a game changer, it’s an industry changer. It changes the way that you can interact with your customers” and “with your suppliers.” Discuss the implications of this statement.

# Globalization Challenges and Opportunities: A Flattened World (1 of 2)

- **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

# Globalization Challenges and Opportunities: A Flattened World (2 of 2)

- Requires new understandings of skills, markets, opportunities
- Challenges yes, but opportunities as well
- Over half of the revenue of S&P 500 US firms is generated off shore
- Information systems enable globalization of commerce

# 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

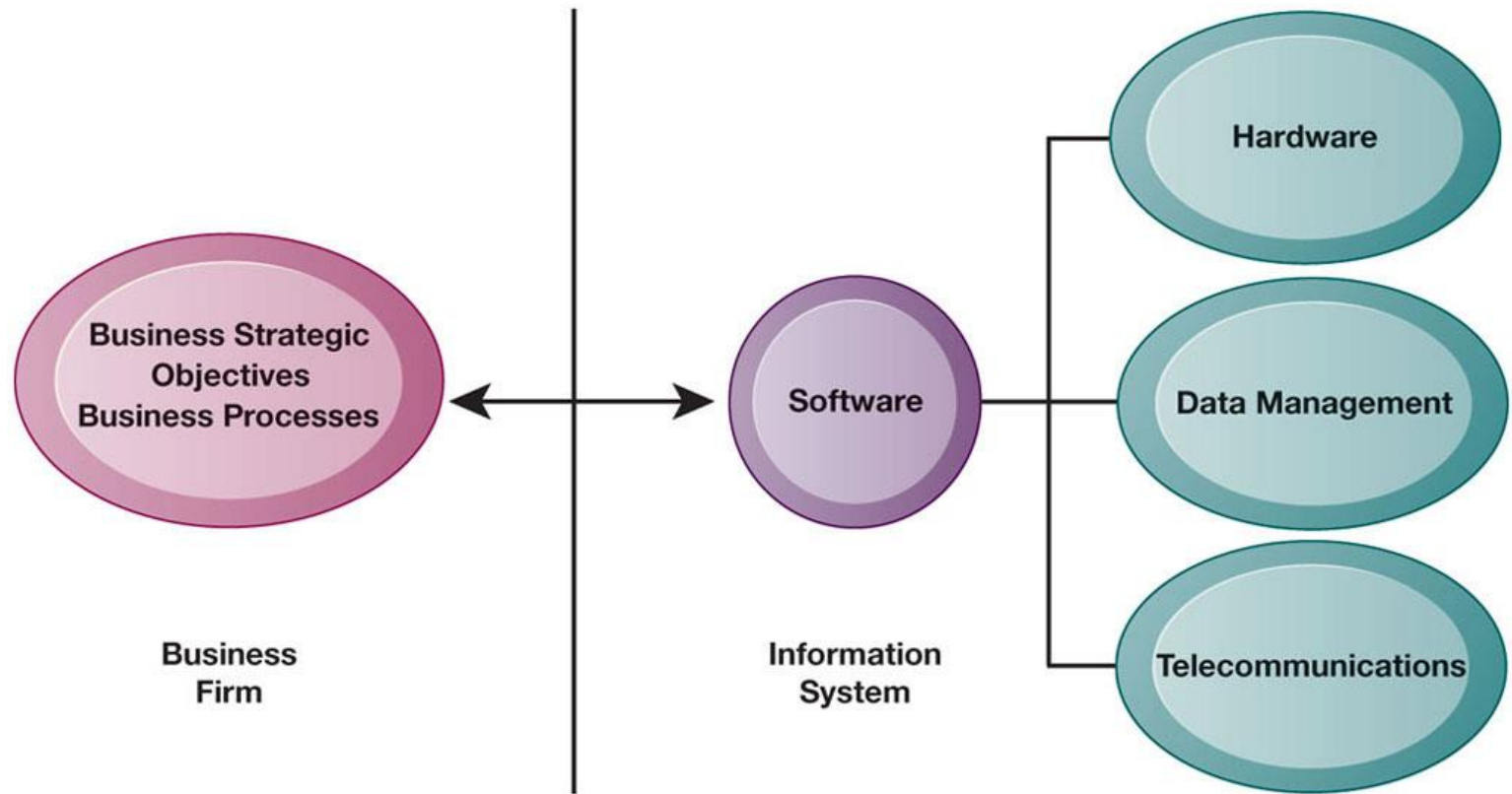
# Strategic Business Objectives of Information Systems (1 of 2)

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

# 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

Figure 1.2 The Interdependence Between Organizations and Information Systems





# 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 \$485 billion in sales in 2017
  - 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 (1 of 2)

- Without accurate information:
  - Managers must use forecasts, best guesses, luck
  - Results in:
    - Overproduction, underproduction
    - Misallocation of resources
    - Poor response times
  - Poor outcomes raise costs, lose customers

# Improved Decision Making (2 of 2)

- 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

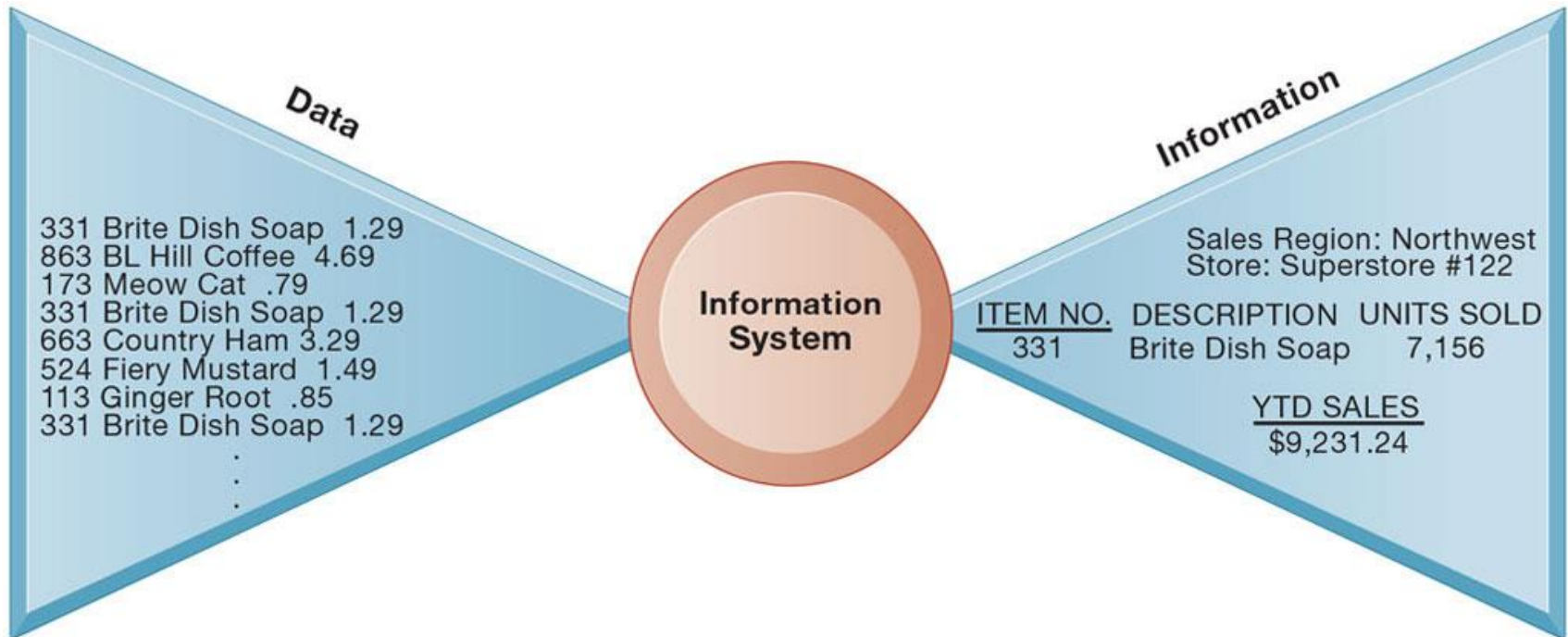
- Businesses may need to invest in information systems out of necessity; simply the cost of doing business
- Keeping up with competitors
  - Citibank's introduction of ATMs
- Federal and state regulations and reporting requirements
  - Toxic Substances Control Act and the Sarbanes-Oxley Act

# 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



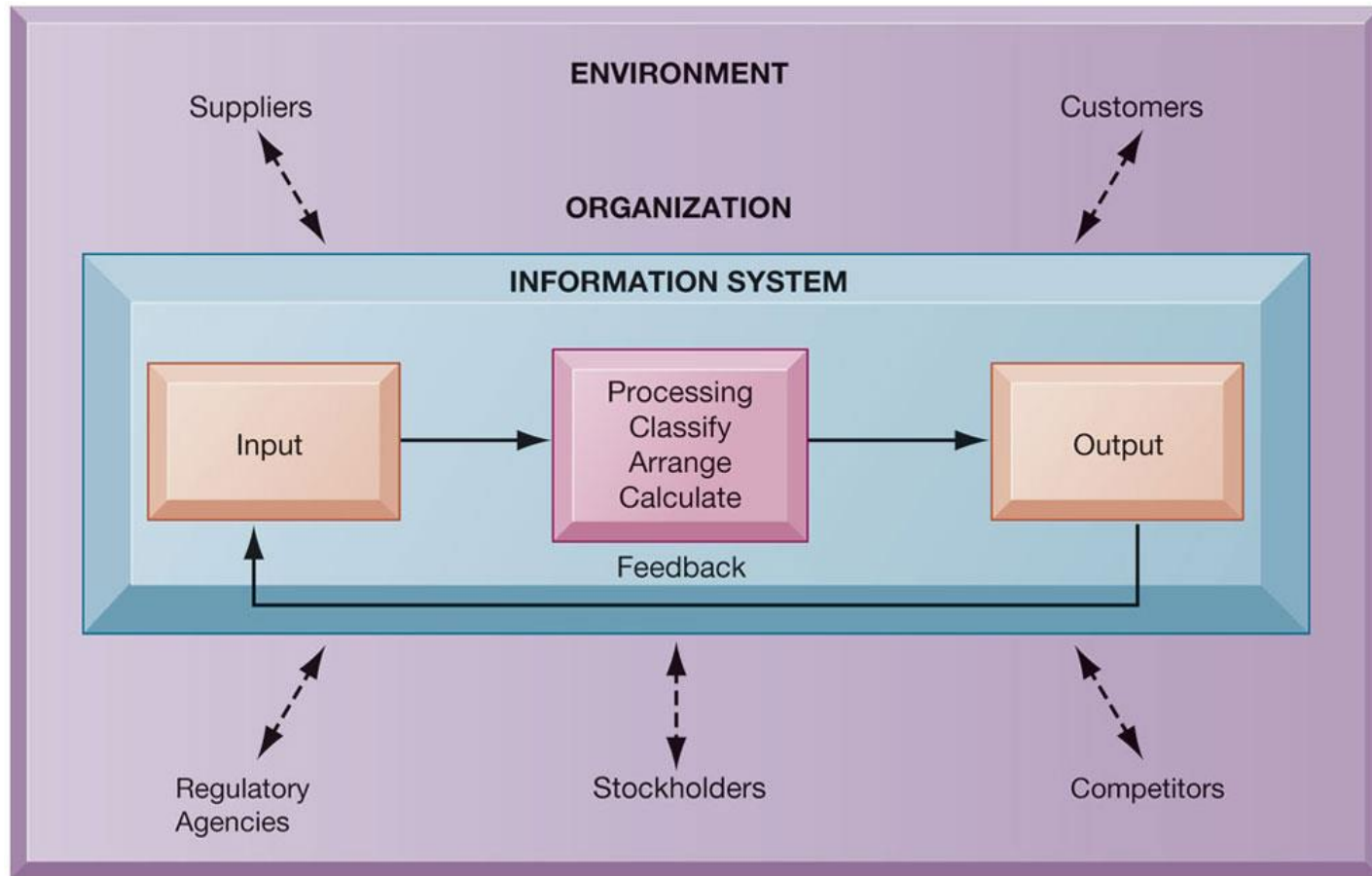
# What Is an Information System? (2 of 3)

- Activities in an information system that produce information:
  - Input
  - Processing
  - Output
  - Feedback
- There is a 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

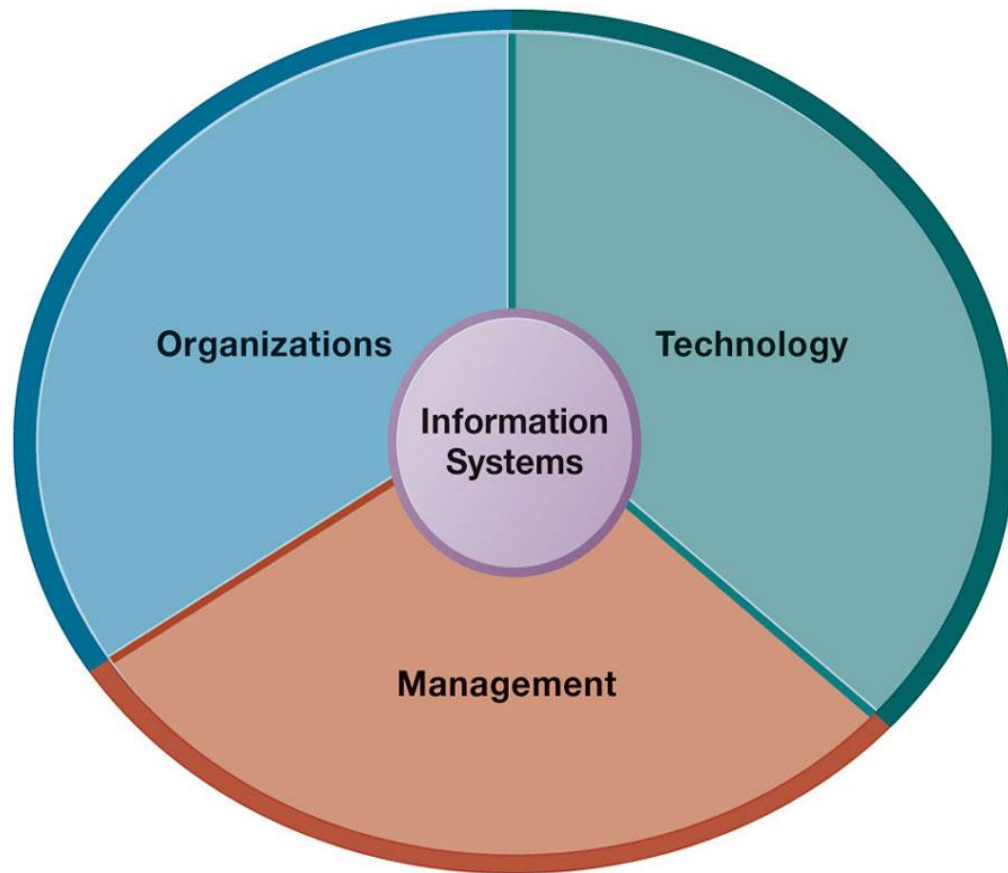
# Figure 1.4 Functions of an Information System



# Dimensions of Information Systems

- Organizations
- Management
- Technology

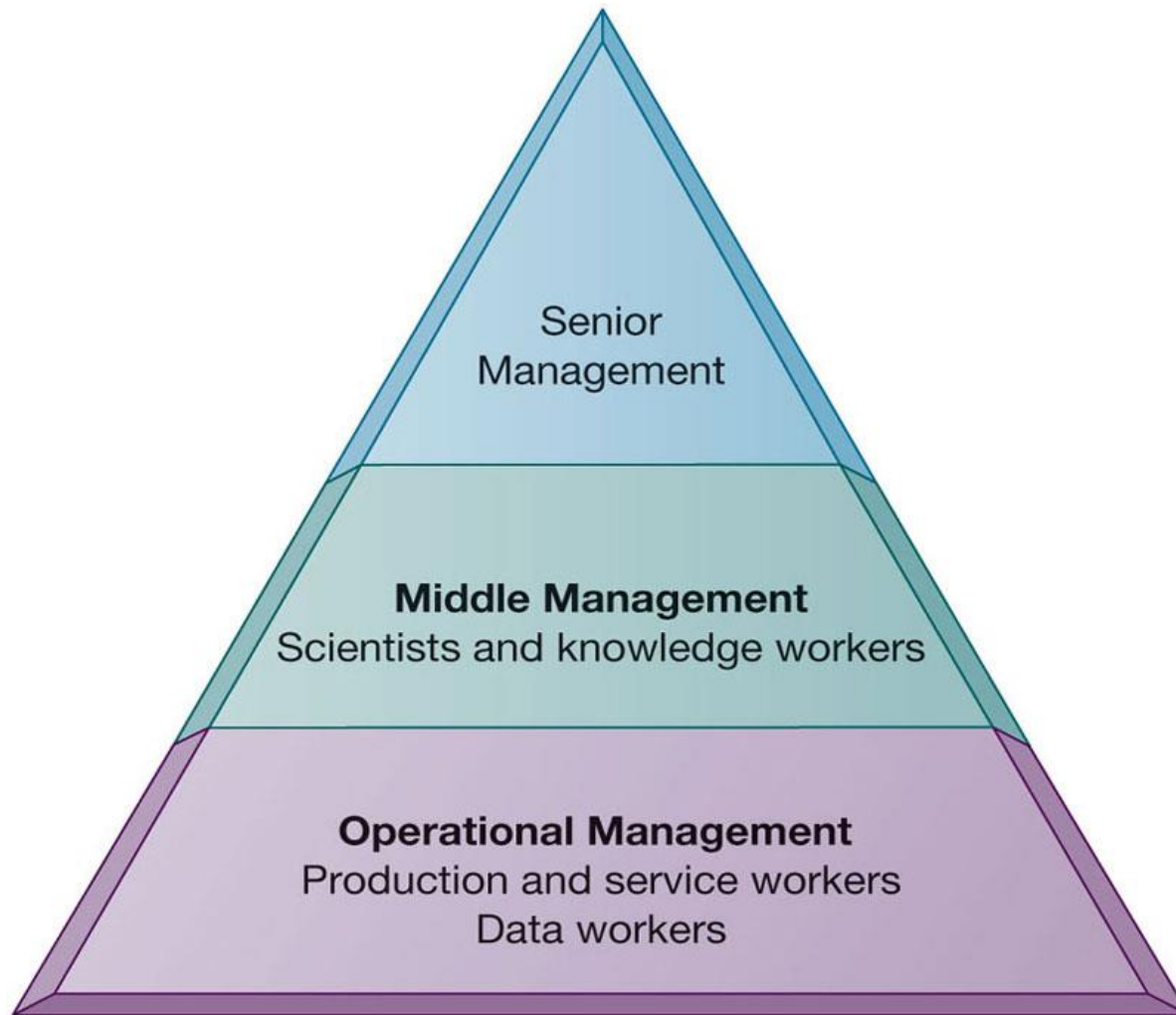
# Figure 1.5 Information Systems Are More Than Computers



# 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: 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: Healthcare at Singapore's JurongHealth Services

- Discussion

- What technologies are used by JurongHealth? What purpose do they serve?
- Search the web for RFID. Suggest an example of using RFID for locating and tracking people.
- What information systems are implemented by JurongHealth? Describe the input, processing, and output of any one such system.
- Why are information systems important for JurongHealth?

# 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 will result in superior returns
  - Productivity increases
  - Revenue increases
  - Superior long-term strategic positioning

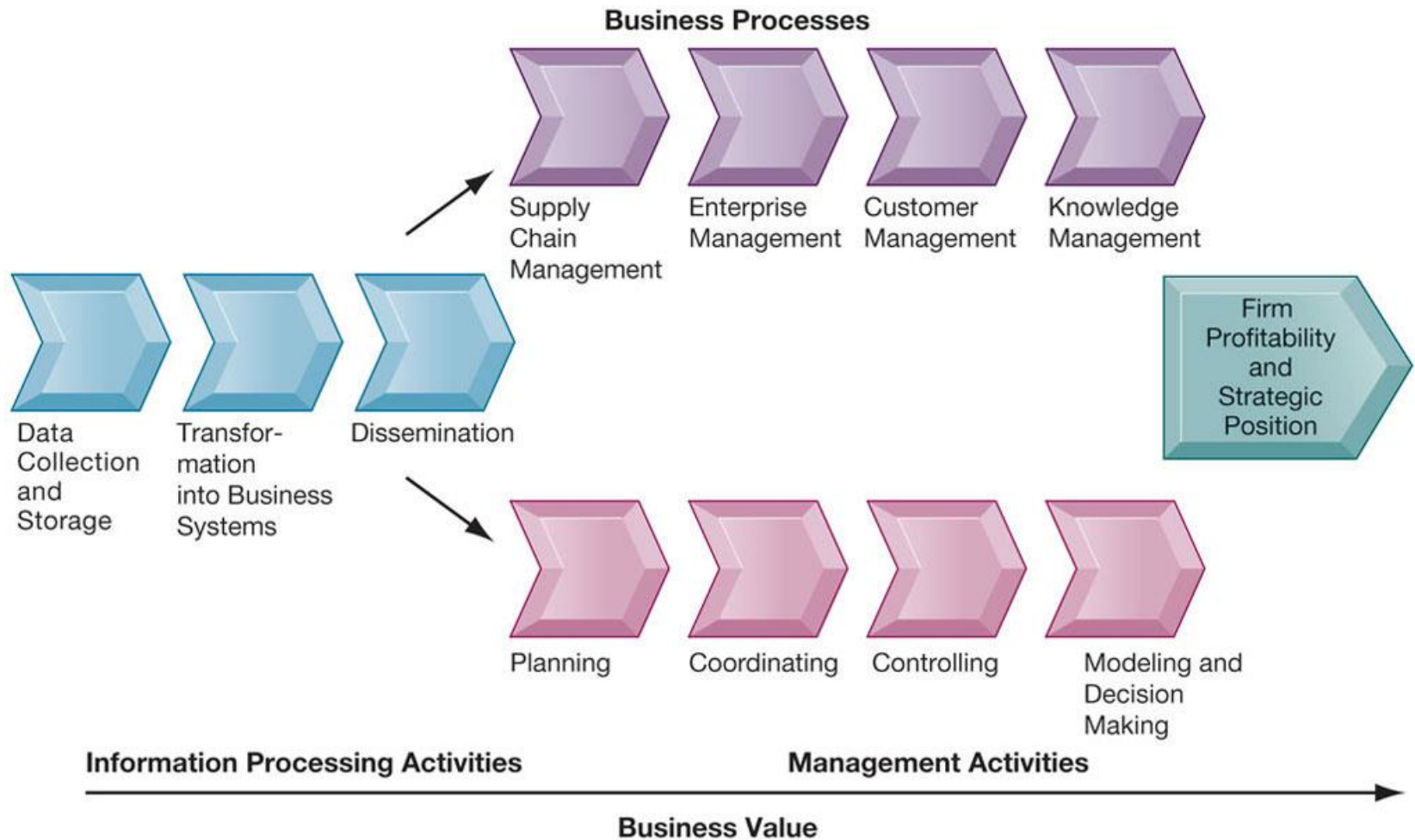
# It Isn't Just Technology: A Business Perspective on Information Systems (2 of 3)

- **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)

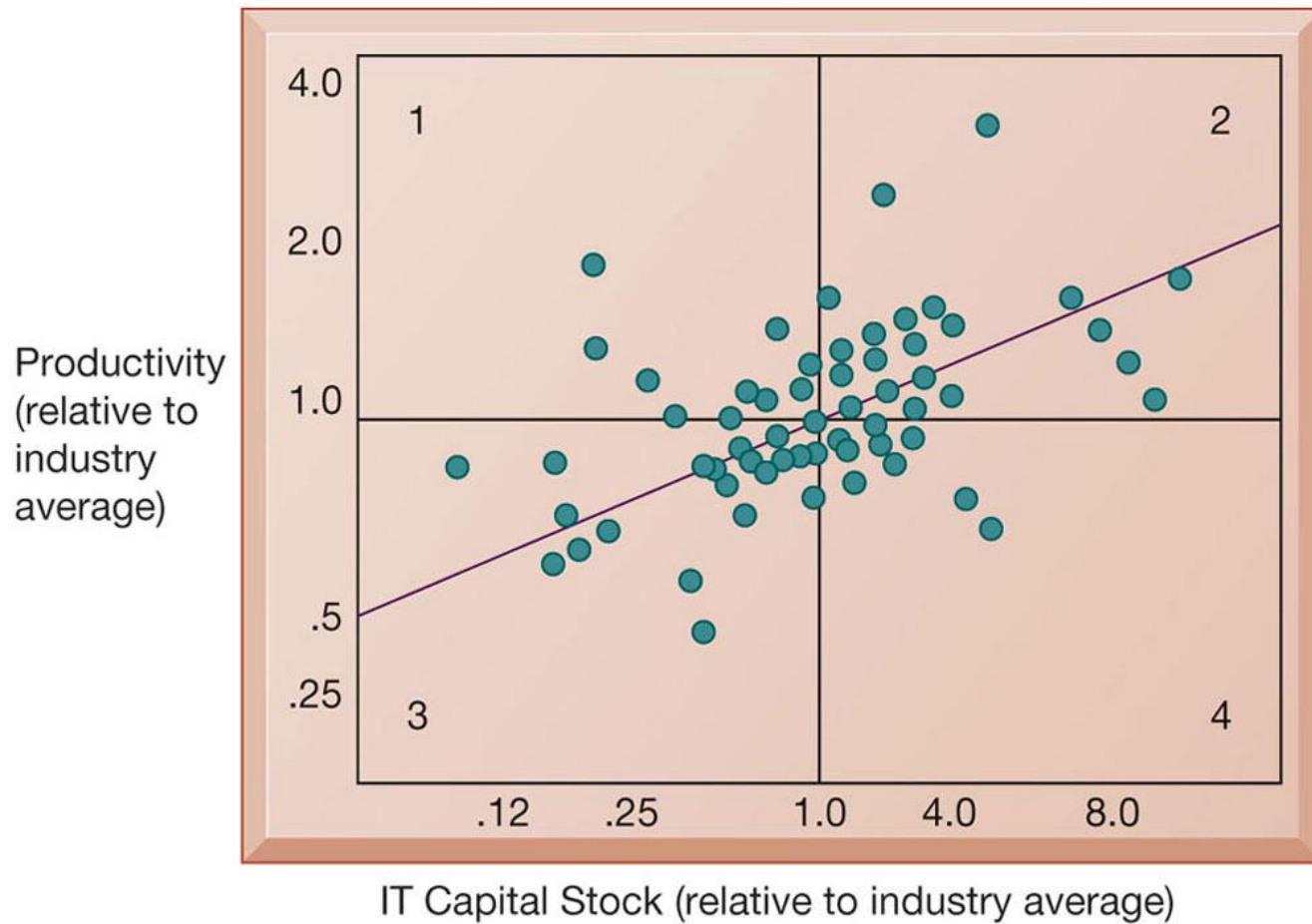
- Investing in information technology does not guarantee good returns
- There is considerable variation in the returns firms receive from systems investments
- **Factors**
  - Adopting the right business model
  - Investing in complementary assets (organizational and management capital)

# Figure 1.7 The Business Information Value Chain





# Figure 1.8 Variation in Returns on Information Technology



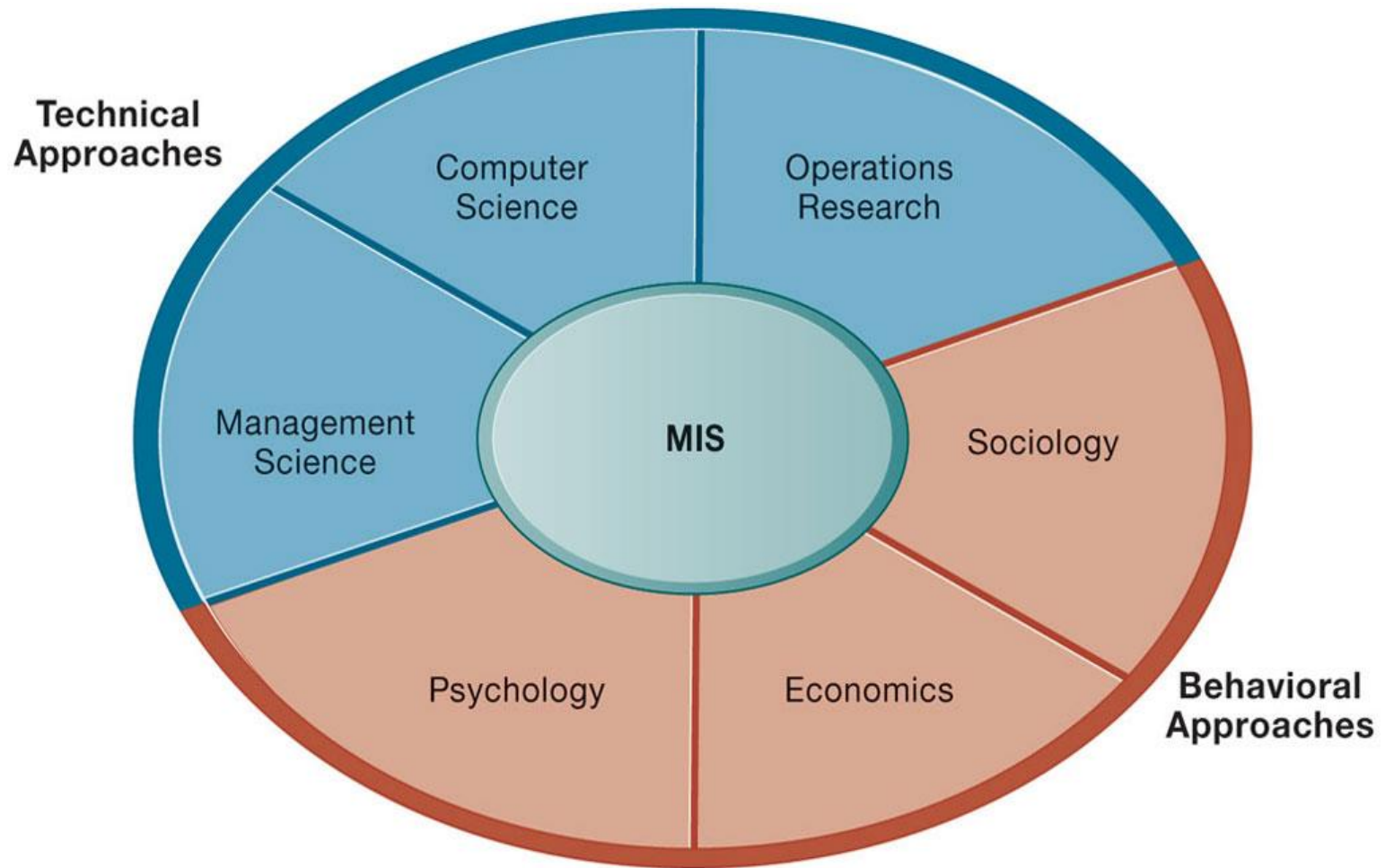
# Complementary Assets: Organizational Capital and the Right Business Model (1 of 2)

- 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

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

- Examples of (complementary) organizational assets
  - Appropriate business model
  - Efficient business processes
- Examples of (complementary) managerial assets
  - Incentives for management innovation
  - Teamwork and collaborative work environments
- Examples of (complementary) 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)

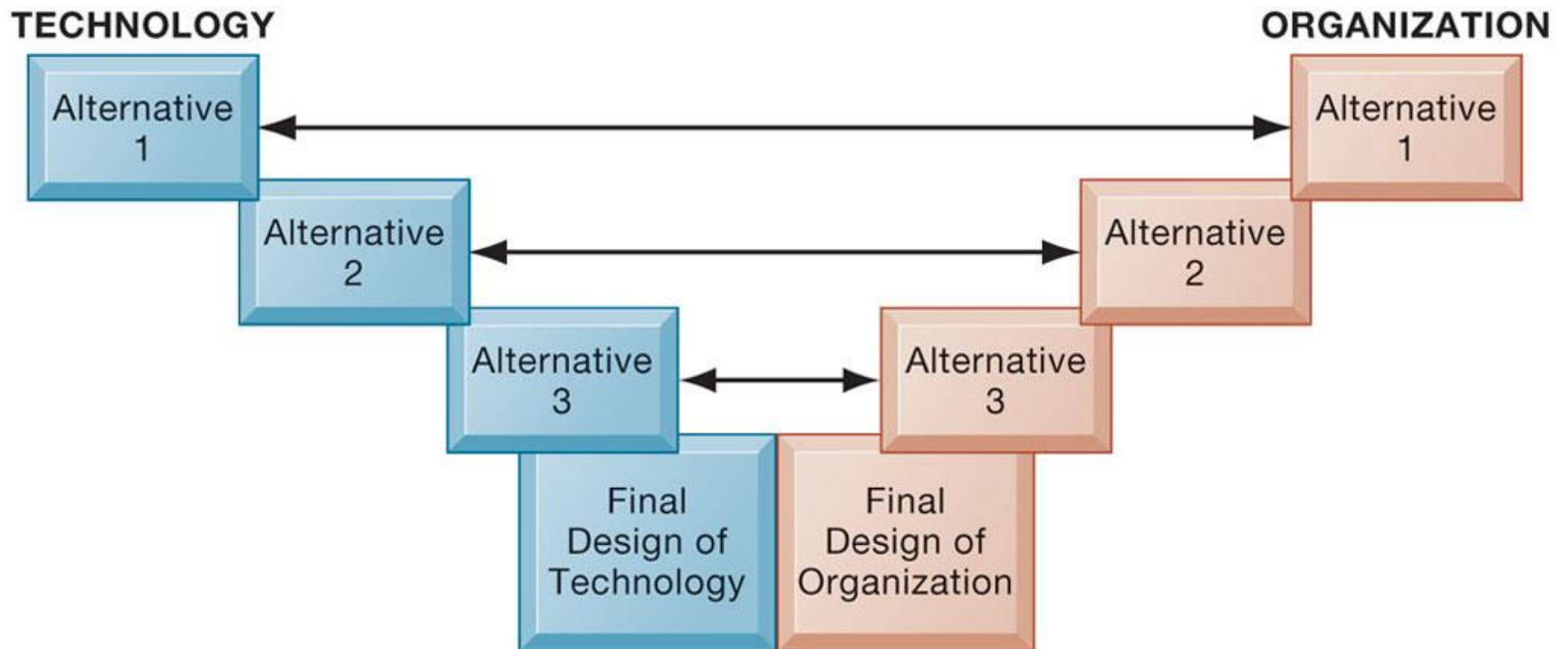
# Approach of This Text: Sociotechnical Systems

(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



# Videos to glance ...

- UPS
  - <https://www.youtube.com/watch?v=vdhF8qxFjWg>
  - <https://www.youtube.com/watch?v=xXuuEkP-sAE>
- Walmart
  - <https://www.youtube.com/watch?v=KRJV1SPYpIE>

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