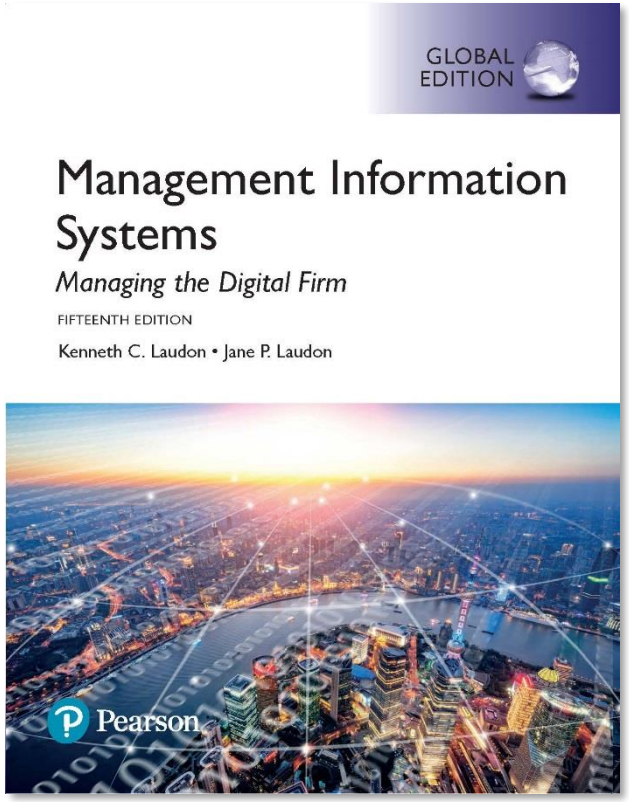
Management Information Systems: Managing the Digital Firm

Fifteenth edition



Chapter 3

Information Systems, Organizations, and Strategy

Pearson

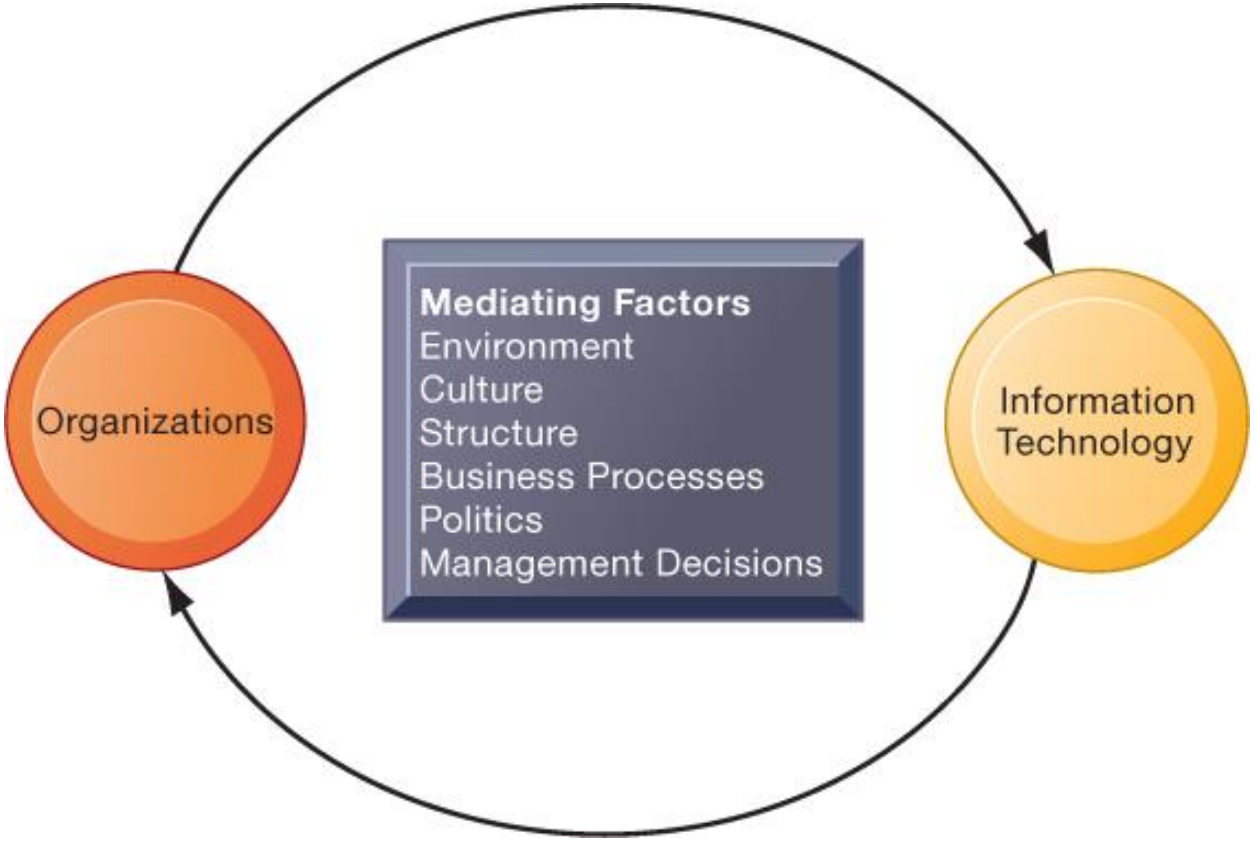
Learning Objectives

- **3-1** Which features of organizations do managers need to know about to build and use information systems successfully?
- **3-2** What is the impact of information systems on organizations?
- **3-3** How do Porter's competitive forces model, the value chain model, synergies, core competencies, and network economics help companies develop competitive strategies using information systems?
- **3-4** What are the challenges posed by strategic information systems, and how should they be addressed?

The Relationship Between Organizations and Information Technology

- Information technology and organizations influence each other
  - Relationship influenced by organization's
    - Structure
    - Business processes
    - Politics
    - Culture
    - Environment
    - Management decisions

Figure 3.1: The Two-Way Relationship Between Organizations and Information Technology



What Is an Organization?

- Technical definition
  - Formal social structure that processes resources from environment to produce outputs
  - A formal legal entity with internal rules and procedures, as well as a social structure
- Behavioral definition
  - A collection of rights, privileges, obligations, and responsibilities that is delicately balanced over a period of time through conflict and conflict resolution

Figure 3.2: The Technical Microeconomic Definition of the Organization

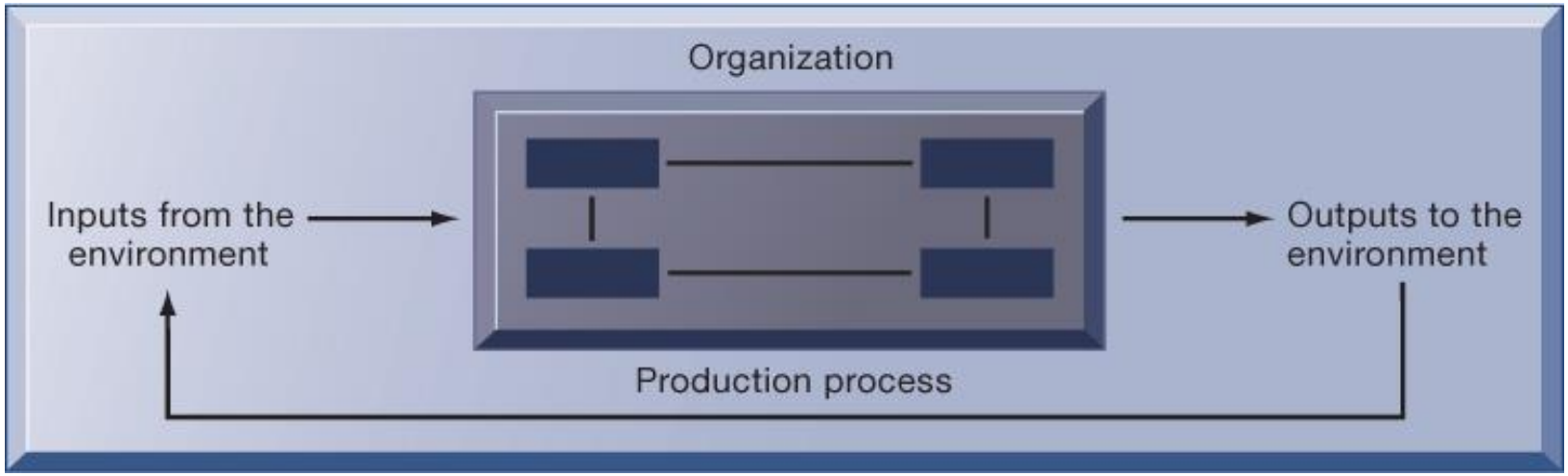
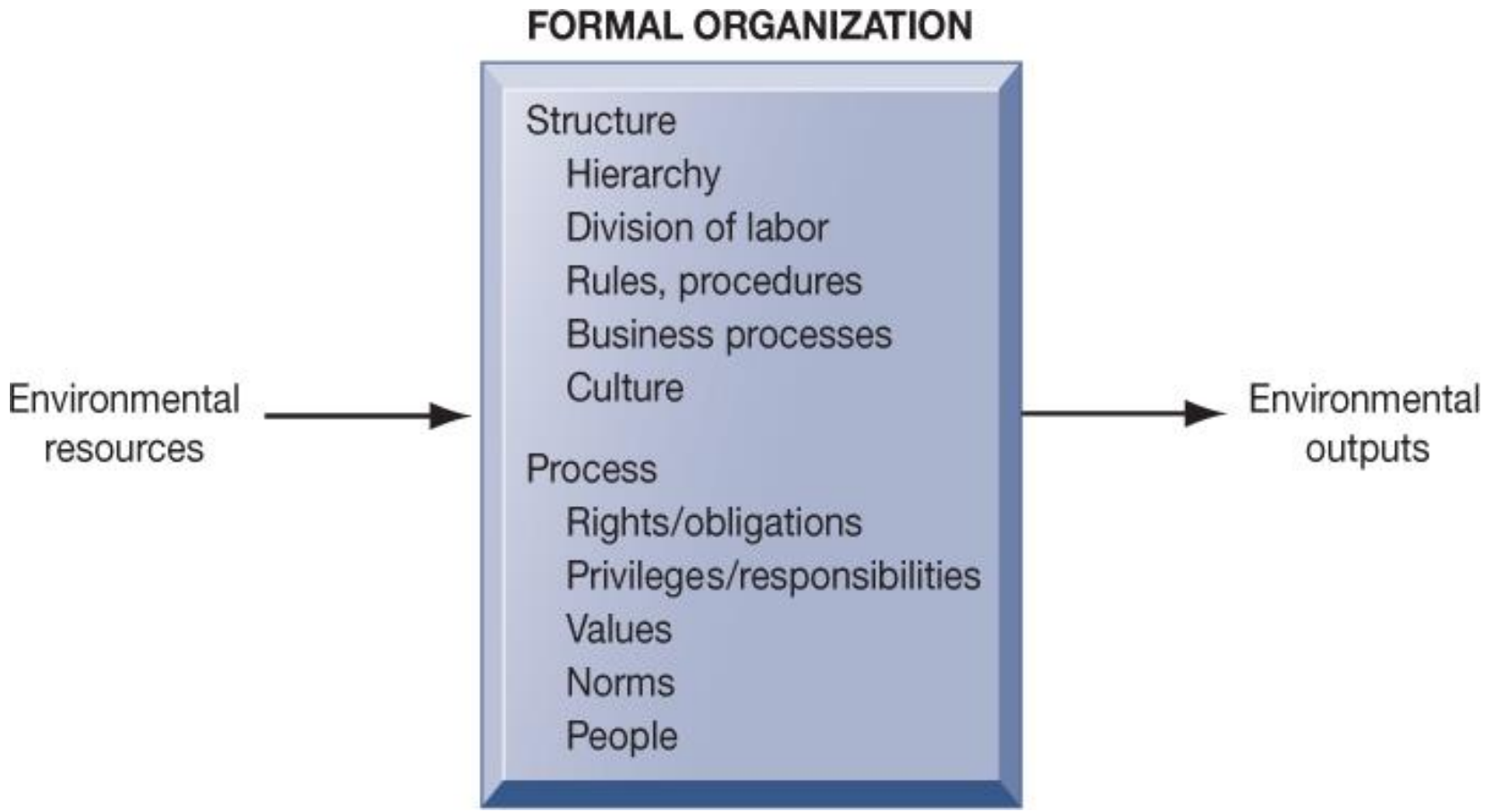


Figure 3.3: The Behavioral View of Organizations



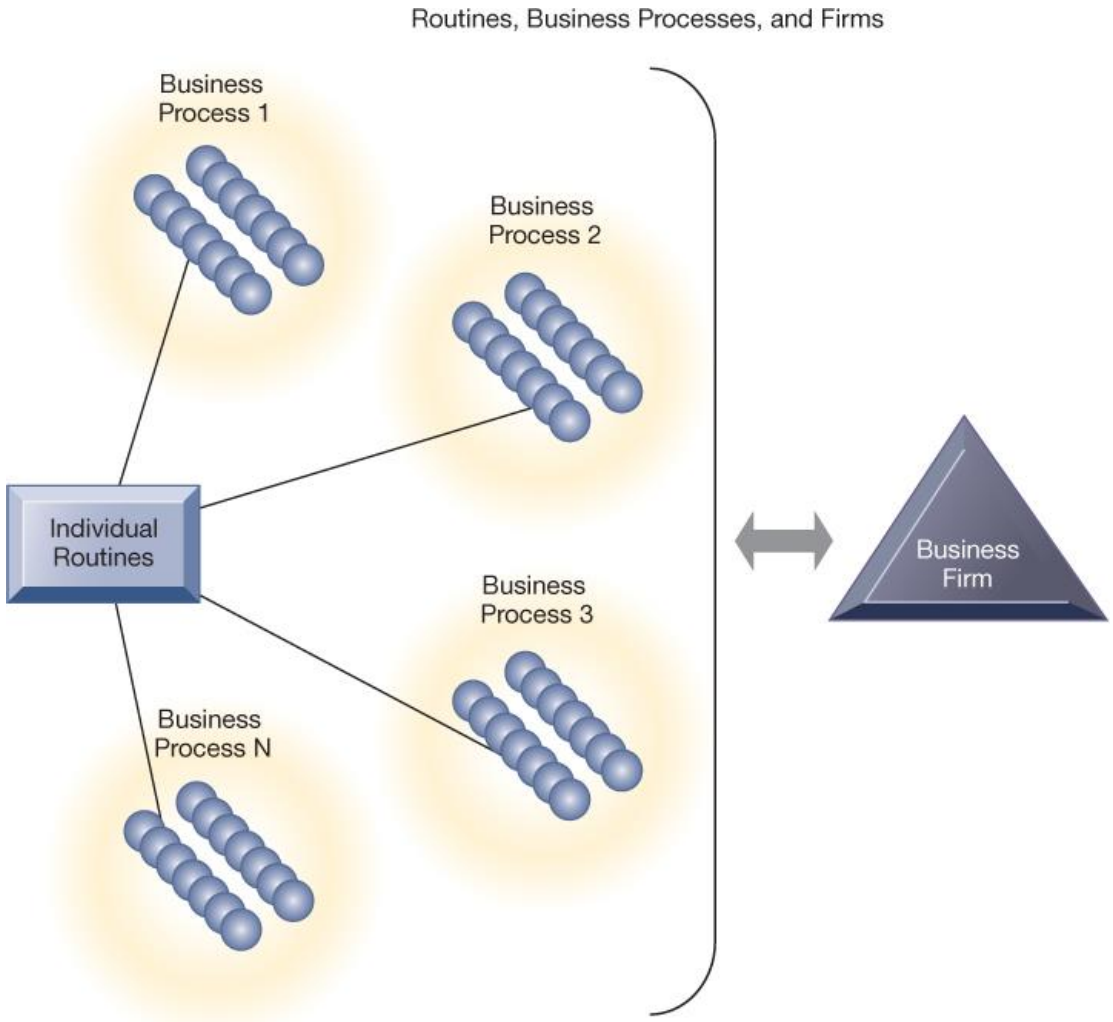
Features of Organizations

- Use of hierarchical structure
- Accountability, authority in system of impartial decision making
- Adherence to principle of efficiency
- Routines and business processes
- Organizational politics, culture, environments, and structures

Routines and Business Processes

- Routines (standard operating procedures)
  - Precise rules, procedures, and practices developed to cope with virtually all expected situations
- Business processes: Collections of routines
- Business firm: Collection of business processes

Figure 3.4: Routines, Business Processes, and Firms



Organizational Politics

- Divergent viewpoints lead to political struggle, competition, and conflict.
- Political resistance greatly hampers organizational change.

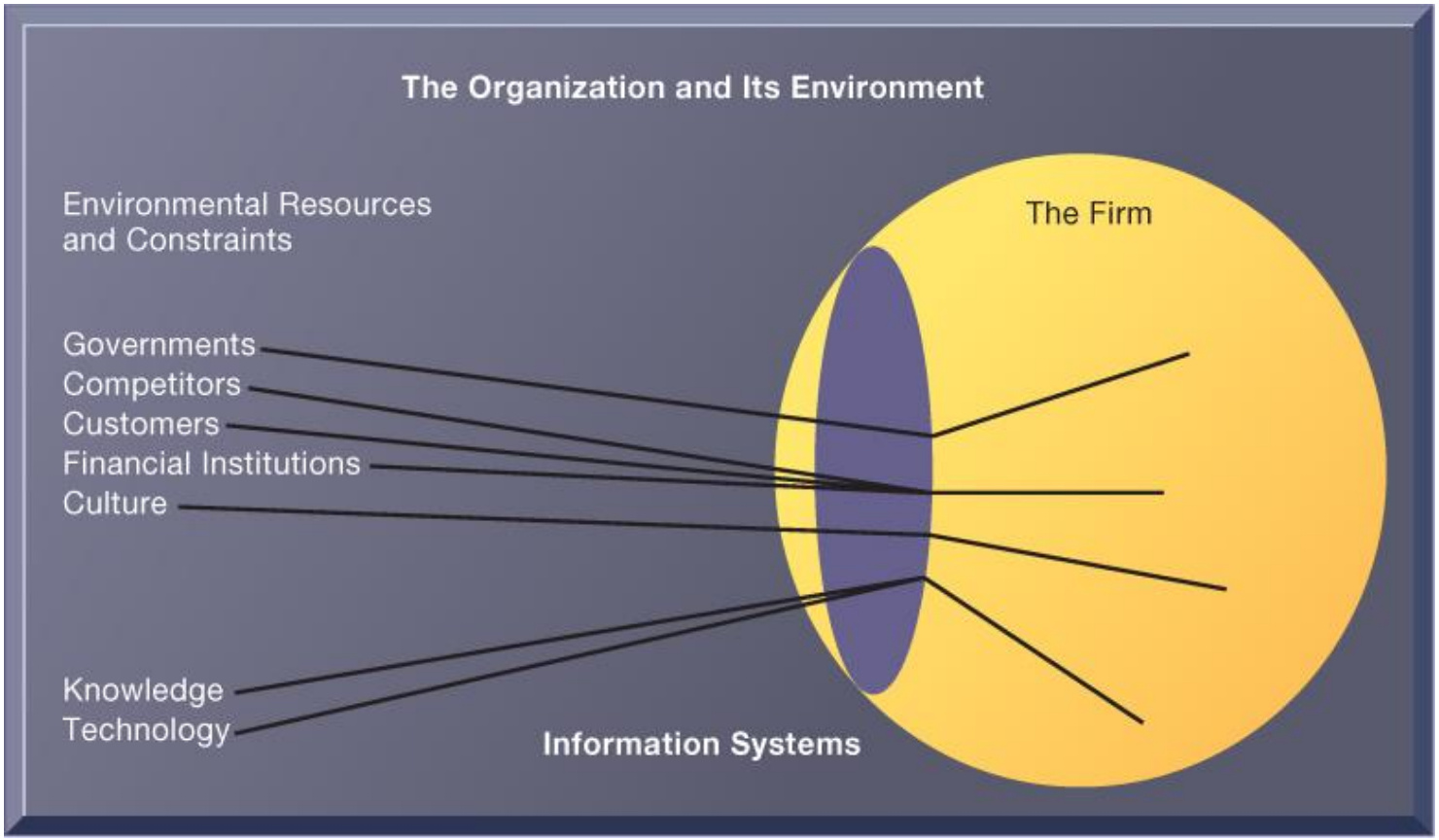
Organizational Culture

- Encompasses set of assumptions that define goal and product
  - What products the organization should produce
  - How and where it should be produced
  - For whom the products should be produced
- May be powerful unifying force as well as restraint on change

Organizational Environments

- Organizations and environments have a reciprocal relationship
- Organizations are open to, and dependent on, the social and physical environment
- Organizations can influence their environments
- Environments generally change faster than organizations
- Information systems can be instrument of environmental scanning, act as a lens

Figure 3.5: Environments and Organizations Have a Reciprocal Relationship



Disruptive Technologies

- Substitute products that perform as well as or better than existing product
- Technology that brings sweeping change to businesses, industries, markets
- Examples: personal computers, word processing software, the Internet, the PageRank algorithm
- First movers and fast followers
  - First movers—inventors of disruptive technologies
  - Fast followers—firms with the size and resources to capitalize on that technology

Organizational Structure

- Five basic kinds of organizational structure (Mintzberg)
  - Entrepreneurial
  - Machine bureaucracy
  - Divisionalized bureaucracy
  - Professional bureaucracy
  - Adhocracy
- Information system often reflects organizational structure

Other Organizational Features

- Goals
  - Coercive, utilitarian, normative, and so on
- Constituencies
- Leadership styles
- Types of tasks

Economic Impacts

- IT changes relative costs of capital and the costs of information
- Information systems technology is a factor of production, like capital and labor
- IT affects the cost and quality of information and changes economics of information
  - Information technology helps firms contract in size because it can reduce transaction costs (the cost of participating in markets)
    - Outsourcing

Transaction Cost Theory

- Firms seek to economize on transaction costs (the costs of participating in markets)
  - Vertical integration, hiring more employees, buying suppliers and distributors
- IT lowers market transaction costs, making it worthwhile for firms to transact with other firms rather than grow the number of employees

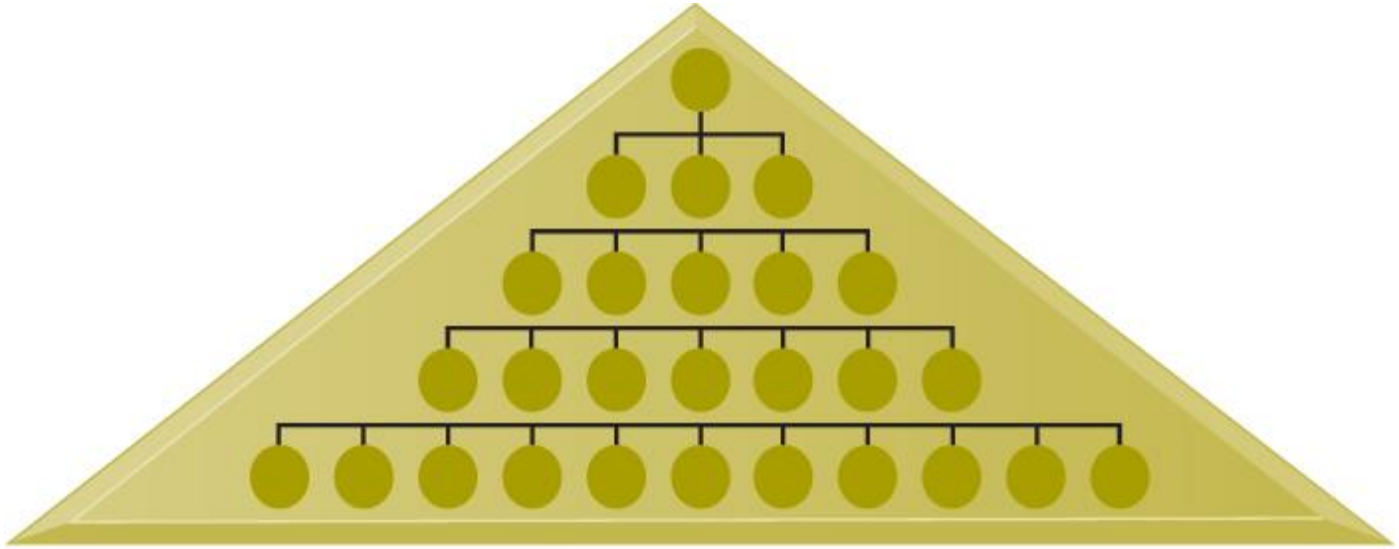
Agency Theory

- Firm is nexus of contracts among self-interested parties requiring supervision
- Firms experience agency costs (the cost of managing and supervising) which rise as firm grows
- IT can reduce agency costs, making it possible for firms to grow without adding to the costs of supervising, and without adding employees

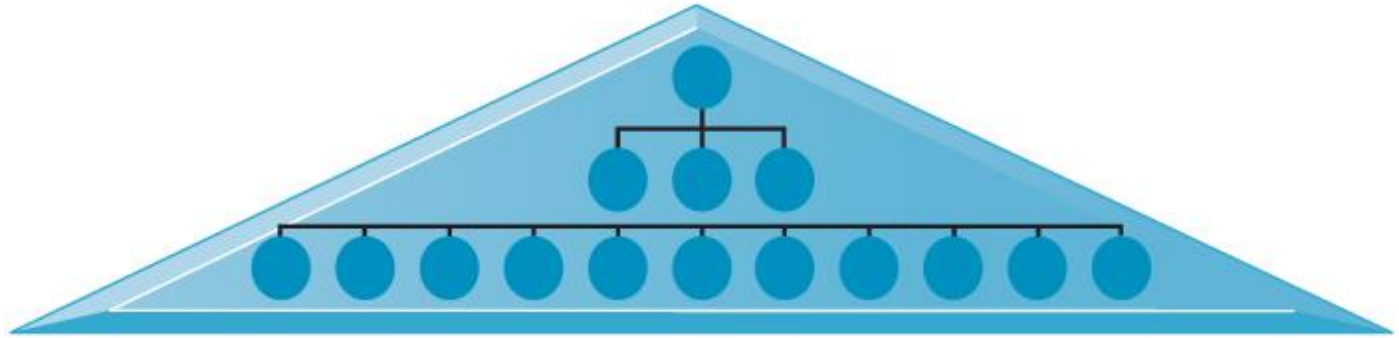
Organizational and Behavioral Impacts

- IT flattens organizations
  - Decision making is pushed to lower levels
  - Fewer managers are needed (IT enables faster decision making and increases span of control)
- Postindustrial organizations
  - Organizations flatten because in postindustrial societies, authority increasingly relies on knowledge and competence rather than formal positions

Figure 3.6: Flattening Organizations



A traditional hierarchical organization with many levels of management

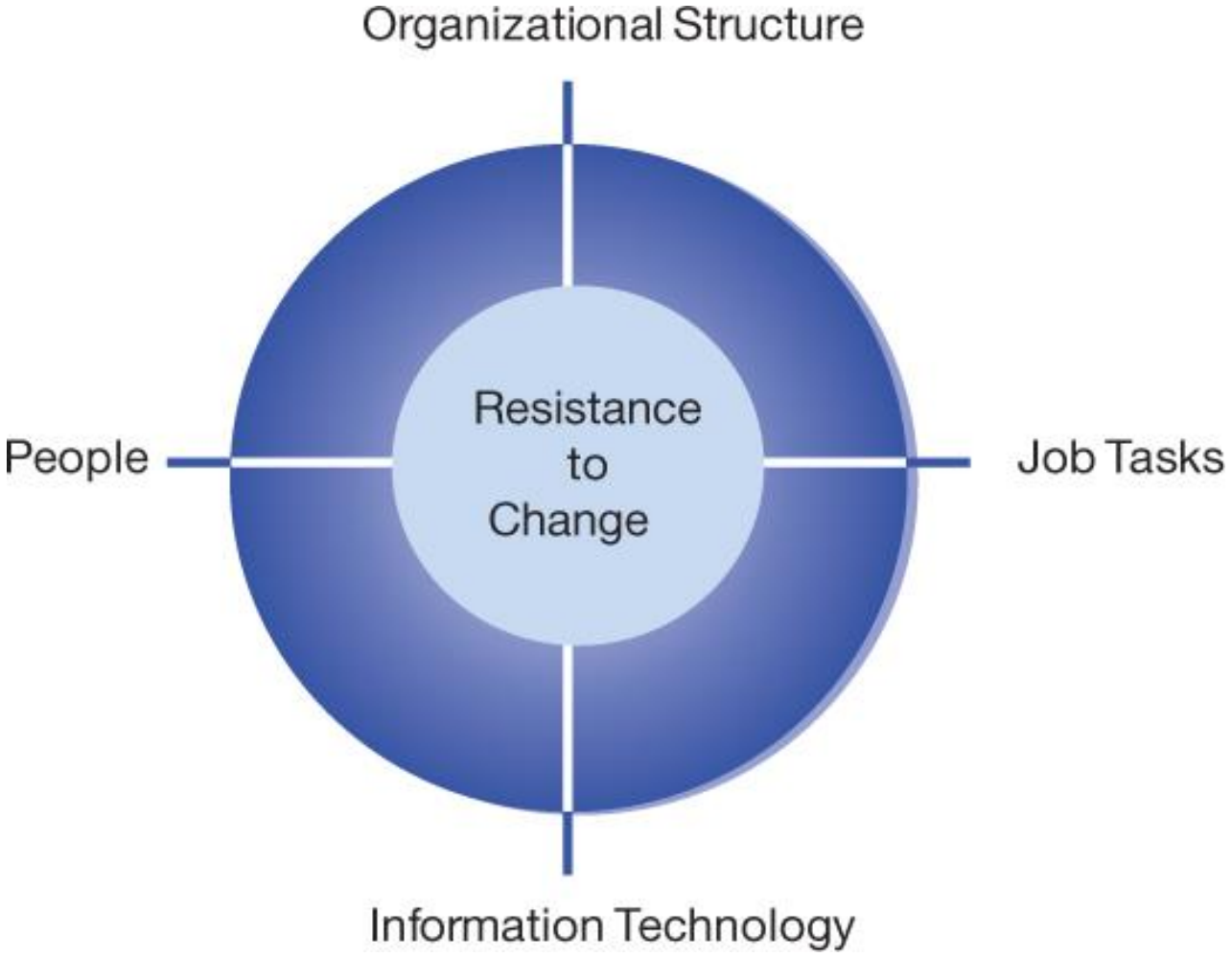


An organization that has been "flattened" by removing layers of management

Understanding Organizational Resistance to Change

- Information systems become bound up in organizational politics because they influence access to a key resource—information
- Information systems potentially change an organization's structure, culture, politics, and work
- Four factors
  - Nature of the innovation
  - Structure of organization
  - Culture of organization
  - Tasks affected by innovation

Figure 3.7: Organizational Resistance to Information System Innovations



The Internet and Organizations

- The Internet increases the accessibility, storage, and distribution of information and knowledge for organizations
- The Internet can greatly lower transaction and agency costs
  - Example: Large firm delivers internal manuals to employees via a corporate website, saving millions of dollars in distribution costs

Implications for the Design and Understanding of Information Systems

- Organizational factors in planning a new system:
  - Environment
  - Structure
    - Hierarchy, specialization, routines, business processes
  - Culture and politics
  - Type of organization and style of leadership
  - Main interest groups affected by system; attitudes of end users
  - Tasks, decisions, and business processes the system will assist

Porter's Competitive Forces Model (1 of 3)

- Why do some firms become leaders in their industry?
- Michael Porter's competitive forces model
  - Provides general view of firm, its competitors, and environment
- Five competitive forces shape fate of firm:
  - Traditional competitors
  - New market entrants
  - Substitute products and services
  - Customers
  - Suppliers

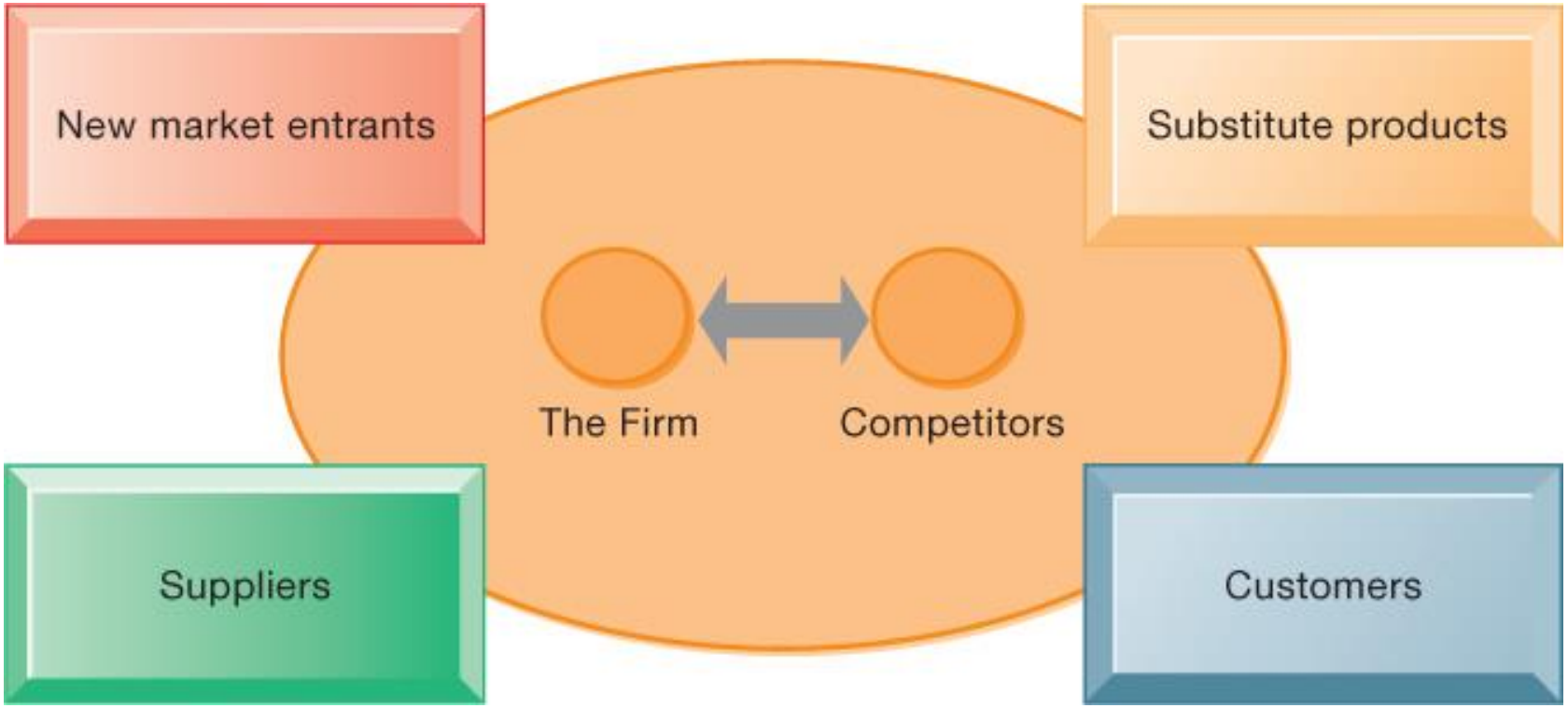
Porter's Competitive Forces Model (2 of 3)

- Traditional competitors
  - All firms share market space with competitors who are continuously devising new products, services, efficiencies, and switching costs
- New market entrants
  - Some industries have high barriers to entry, for example, computer chip business
  - New companies have new equipment, younger workers, but little brand recognition

Porter's Competitive Forces Model (3 of 3)

- Substitute products and services
  - Substitutes customers might use if your prices become too high, for example, iTunes substitutes for CDs
- Customers
  - Can customers easily switch to competitor's products? Can they force businesses to compete on price alone in transparent marketplace?
- Suppliers
  - Market power of suppliers when firm cannot raise prices as fast as suppliers

Figure 3.8: Porter's Competitive Forces Model



Information System Strategies for Dealing with Competitive Forces (1 of 3)

- Four generic strategies for dealing with competitive forces, enabled by using IT:
  - Low-cost leadership
  - Product differentiation
  - Focus on market niche
  - Strengthen customer and supplier intimacy

Information System Strategies for Dealing with Competitive Forces (2 of 3)

- Low-cost leadership
  - Produce products and services at a lower price than competitors
  - Example: Walmart's efficient customer response system
- Product differentiation
  - Enable new products or services, greatly change customer convenience and experience
  - Example: Google, Nike, Apple
  - Mass customization

Information System Strategies for Dealing with Competitive Forces (3 of 3)

- Focus on market niche
  - Use information systems to enable a focused strategy on a single market niche; specialize
  - Example: Hilton Hotels' OnQ system
- Strengthen customer and supplier intimacy
  - Use information systems to develop strong ties and loyalty with customers and suppliers
  - Increase switching costs
  - Examples: Chrysler, Amazon, Starbucks

The Internet's Impact on Competitive Advantage

- Transformation or threat to some industries
  - Examples: travel agency, printed encyclopedia, media
- Competitive forces still at work, but rivalry more intense
- Universal standards allow new rivals, entrants to market
- New opportunities for building brands and loyal customer bases

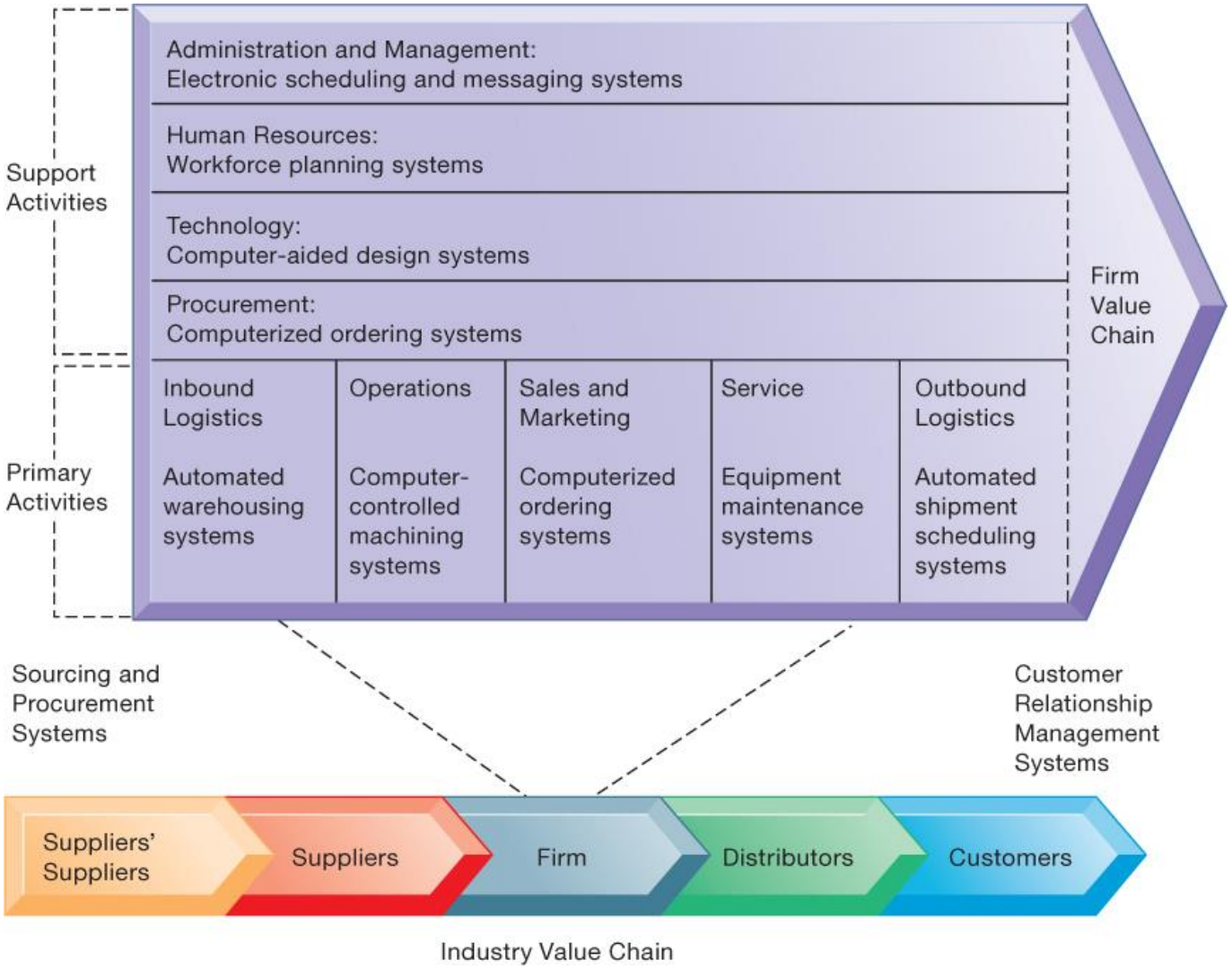
Smart Products and the Internet of Things

- Internet of Things (IoT)
  - Growing use of Internet-connected sensors in products
- Smart products
  - Fitness equipment, health trackers
- Expand product differentiation opportunities
  - Increasing rivalry between competitors
- Raise switching costs
- Inhibit new entrants
- May decrease power of suppliers

The Business Value Chain Model

- Firm as series of activities that add value to products or services
- Highlights activities where competitive strategies can best be applied
  - Primary activities vs. support activities
- At each stage, determine how information systems can improve operational efficiency and improve customer and supplier intimacy
- Utilize benchmarking, industry best practices

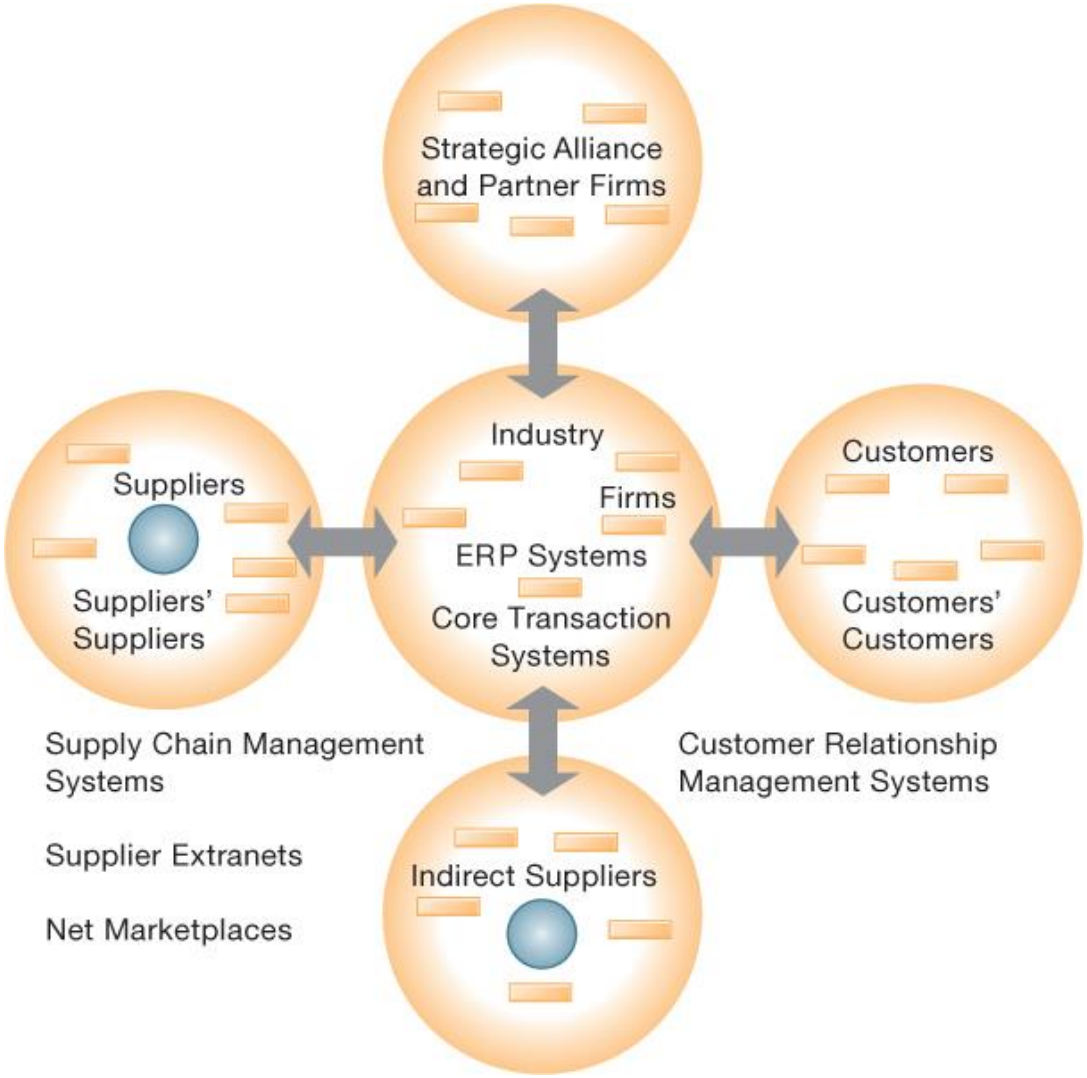
Figure 3.9: The Value Chain Model



Extending the Value Chain: The Value Web

- Firm's value chain is linked to value chains of suppliers, distributors, customers
- Industry value chain
- Value web
  - Collection of independent firms using highly synchronized IT to coordinate value chains to produce product or service collectively
  - More customer driven, less linear operation than traditional value chain

Figure 3.10: The Value Web



Synergies

- When output of some units are used as inputs to others, or organizations pool markets and expertise
- Example: merger of Bank of NY and JPMorgan Chase
- Purchase of YouTube by Google

Core Competencies

- Activity for which firm is world-class leader
- Relies on knowledge, experience, and sharing this across business units
- Example: Procter & Gamble's intranet and directory of subject matter experts

Network-Based Strategies (1 of 3)

- Take advantage of firm's abilities to network with one another
- Include use of:
  - Network economics
  - Virtual company model
  - Business ecosystems

Network Economics

- Marginal cost of adding new participant almost zero, with much greater marginal gain
- Value of community grows with size
- Value of software grows as installed customer base grows
- Compare to traditional economics and law of diminishing returns

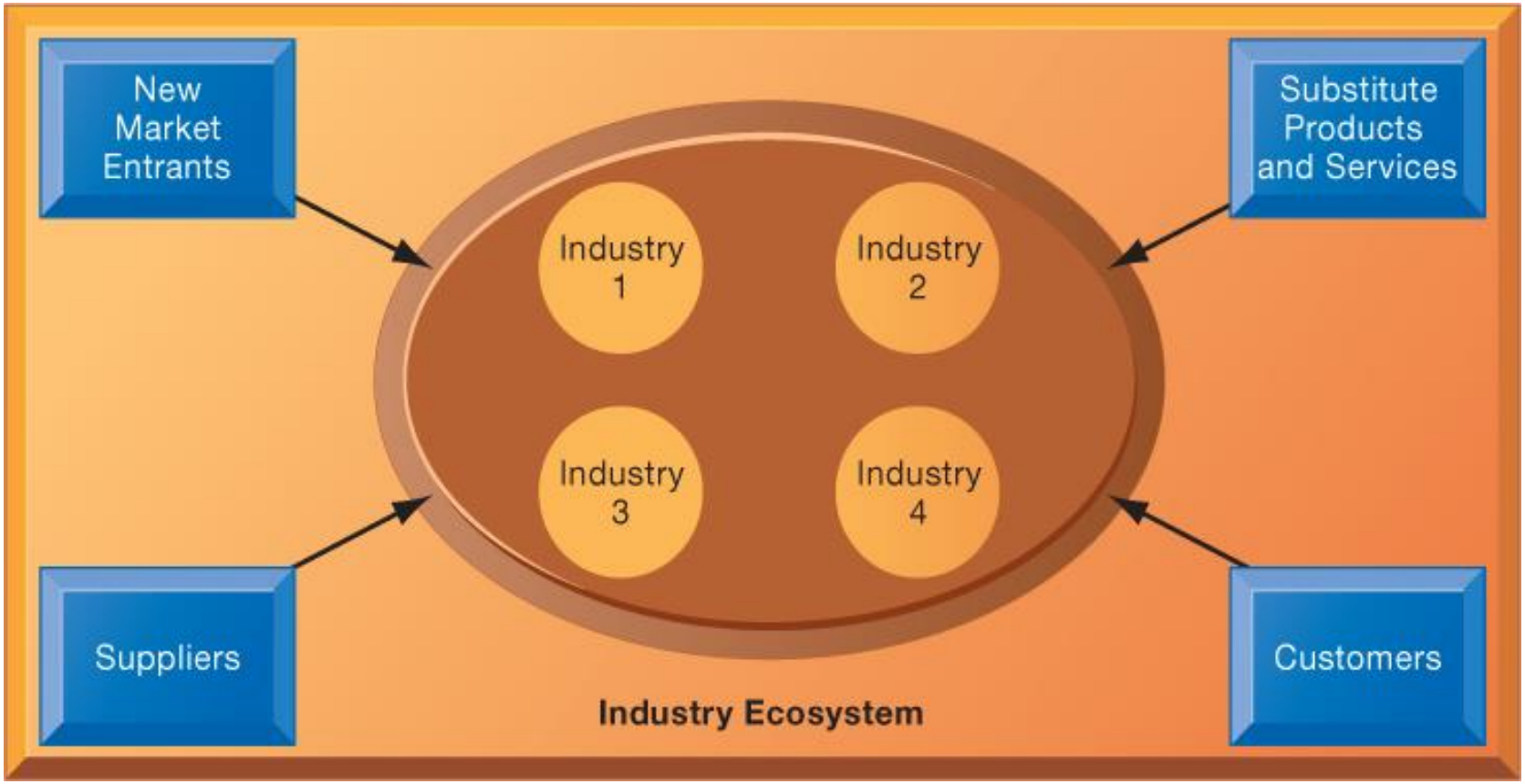
Virtual Company Model

- Virtual company
  - Uses networks to ally with other companies
  - Creates and distributes products without being limited by traditional organizational boundaries or physical locations
- Example: Li & Fung
  - Manages production, shipment of garments for major fashion companies
  - Outsources all work to thousands of suppliers

Business Ecosystems and Platforms

- Industry sets of firms providing related services and products
- Platforms
  - Microsoft, Facebook
- Keystone firms
- Niche firms
- Individual firms can consider how IT will help them become profitable niche players in larger ecosystems

Figure 3.11: An Ecosystem Strategic Model



Challenges Posed by Strategic Information Systems

- Sustaining competitive advantage
  - Competitors can retaliate and copy strategic systems
  - Systems may become tools for survival
- Aligning IT with business objectives
  - Performing strategic systems analysis
    - Structure of industry
    - Firm value chains
- Managing strategic transitions
  - Adopting strategic systems requires changes in business goals, relationships with customers and suppliers, and business processes