



Chapter 3

Information Systems, Organizations, and Strategy

VIDEO CASES

Case 1: National Basketball Association: Competing on Global Delivery with Akamai OS Streaming

Case 2: IT and Geo-Mapping Help a Small Business Succeed (2009)

Case 3: Materials Handling Equipment Corp: Enterprise Systems Drive Corporate Strategy for a Small Business

Instructional Video 1 SAP BusinessOne ERP: From Orders to Final Delivery and Payment



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Learning Objectives

- **Identify and describe important features of organizations that managers need to know about in order to build and use information systems successfully.**
- **Demonstrate how Porter's competitive forces model helps companies develop competitive strategies using information systems.**
- **Explain how the value chain and value web models help businesses identify opportunities for strategic information system applications.**



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Learning Objectives (cont.)

- **Demonstrate how information systems help businesses use synergies, core competencies, and network-based strategies to achieve competitive advantage.**
- **Assess the challenges posed by strategic information systems and management solutions.**

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Will Sears' s Technology Strategy Work This Time?

- **Problem:** Fading brand, powerful competitors, technology costs
- **Solutions:**
 - Customer data mining to improve customer intimacy, design sales floors, implement customer programs and promotions
- **Demonstrates IT' s central role in defining competitive strategy**

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Organizations and Information Systems

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

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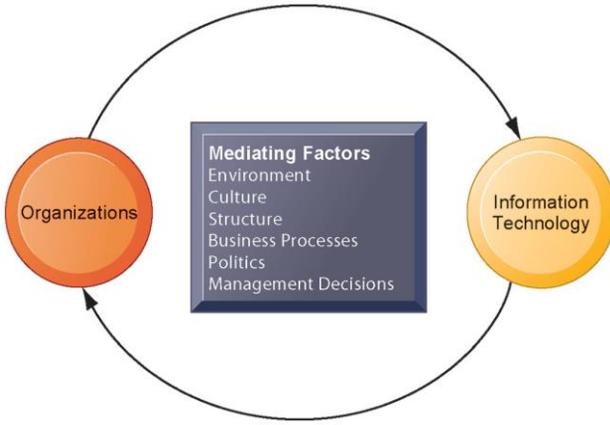


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THE TWO-WAY RELATIONSHIP BETWEEN ORGANIZATIONS AND INFORMATION TECHNOLOGY

This complex two-way relationship is mediated by many factors, not the least of which are the decisions made—or not made—by managers. Other factors mediating the relationship include the organizational culture, structure, politics, business processes, and environment.



```

graph LR
    Org((Organizations)) --> IT((Information Technology))
    IT --> Org
    MF[Mediating Factors  
Environment  
Culture  
Structure  
Business Processes  
Politics  
Management Decisions]
  
```

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Organizations and Information Systems

- **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

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THE TECHNICAL MICROECONOMIC DEFINITION OF THE ORGANIZATION

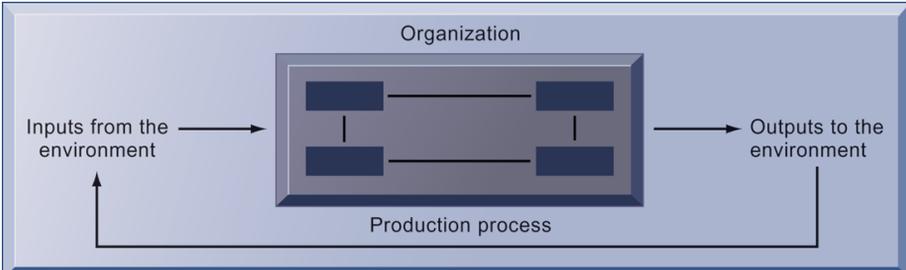


FIGURE 3-2 In the microeconomic definition of organizations, capital and labor (the primary production factors provided by the environment) are transformed by the firm through the production process into products and services (outputs to the environment). The products and services are consumed by the environment, which supplies additional capital and labor as inputs in the feedback loop.

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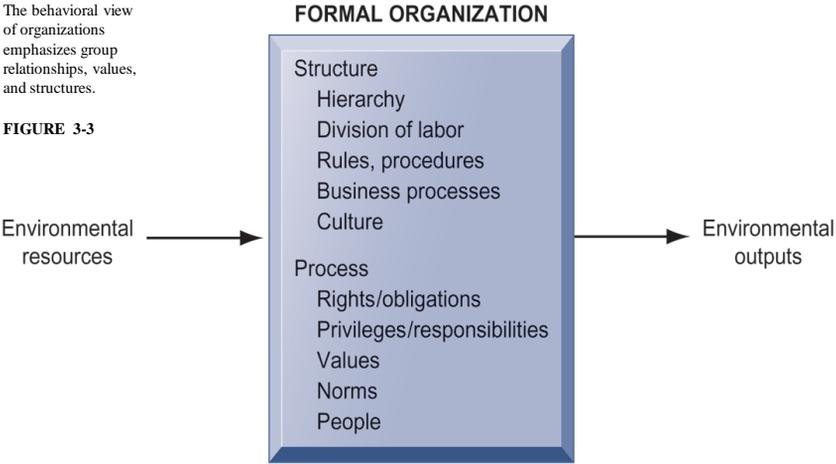


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THE BEHAVIORAL VIEW OF ORGANIZATIONS

The behavioral view of organizations emphasizes group relationships, values, and structures.

FIGURE 3-3



FORMAL ORGANIZATION

Structure
Hierarchy
Division of labor
Rules, procedures
Business processes
Culture

Process
Rights/obligations
Privileges/responsibilities
Values
Norms
People

Environmental resources → Environmental outputs

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Organizations and Information Systems

- **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

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Organizations and Information Systems

- **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**

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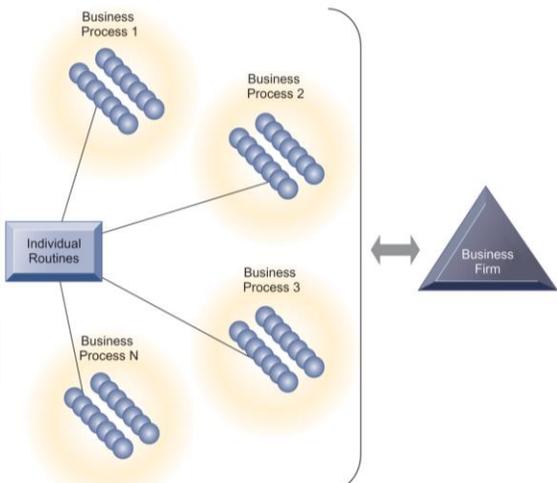


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ROUTINES, BUSINESS PROCESSES, AND FIRMS

All organizations are composed of individual routines and behaviors, a collection of which make up a business process. A collection of business processes make up the business firm. New information system applications require that individual routines and business processes change to achieve high levels of organizational performance.

FIGURE 3-4



The diagram illustrates the relationship between individual routines, business processes, and a business firm. On the left, a box labeled 'Individual Routines' is connected by lines to four clusters of blue circles representing 'Business Process 1', 'Business Process 2', 'Business Process 3', and 'Business Process N'. These clusters are grouped together by a large right-facing curly bracket. To the right of the bracket is a blue triangle labeled 'Business Firm'. A double-headed horizontal arrow connects the bracketed group of business processes to the 'Business Firm' triangle, indicating a bidirectional relationship.

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Organizations and Information Systems

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

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Organizations and Information Systems

- **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**

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Organizations and Information Systems

- **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.

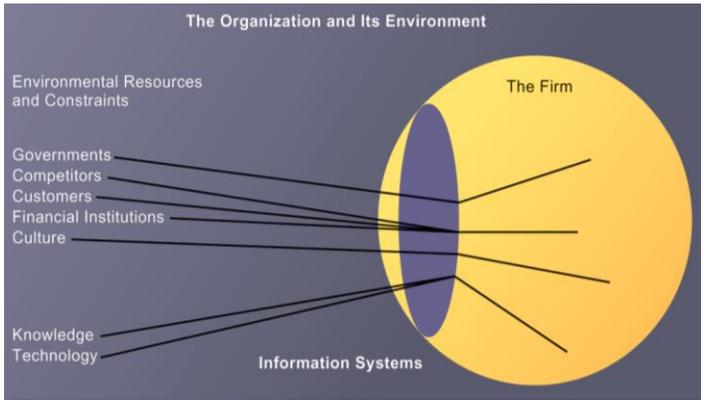
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ENVIRONMENTS AND ORGANIZATIONS HAVE A RECIPROCAL RELATIONSHIP



The diagram, titled "The Organization and Its Environment", shows a large yellow circle labeled "The Firm" on the right. To its left is a dark blue area labeled "Environmental Resources and Constraints". A list of environmental factors (Governments, Competitors, Customers, Financial Institutions, Culture, Knowledge, Technology) has lines pointing from the blue area to the firm. Below the firm, a yellow oval labeled "Information Systems" has lines pointing from the firm to it, indicating a reciprocal relationship.

FIGURE 3-5 Environments shape what organizations can do, but organizations can influence their environments and decide to change environments altogether. Information technology plays a critical role in helping organizations perceive environmental change and in helping organizations act on their environment.

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Organizations and Information Systems

- **Disruptive technologies**
 - Technology that brings about 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

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Organizations and Information Systems

- **5 basic kinds of organizational structure**
 - **Entrepreneurial:**
 - Small start-up business
 - **Machine bureaucracy:**
 - Midsize manufacturing firm
 - **Divisionalized bureaucracy:**
 - Fortune 500 firms
 - **Professional bureaucracy:**
 - Law firms, school systems, hospitals
 - **Adhocracy:**
 - Consulting firms

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Organizations and Information Systems

- **Other organizational features**
 - **Goals**
 - Coercive, utilitarian, normative, and so on
 - **Constituencies**
 - **Leadership styles**
 - **Tasks**
 - **Surrounding environments**

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How Information Systems Impact Organizations and Business Firms

- **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

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How Information Systems Impact Organizations and Business Firms

- **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 for firm, making it worthwhile for firms to transact with other firms rather than grow the number of employees.

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How Information Systems Impact Organizations and Business Firms

- **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.

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How Information Systems Impact Organizations and Business Firms

- **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.

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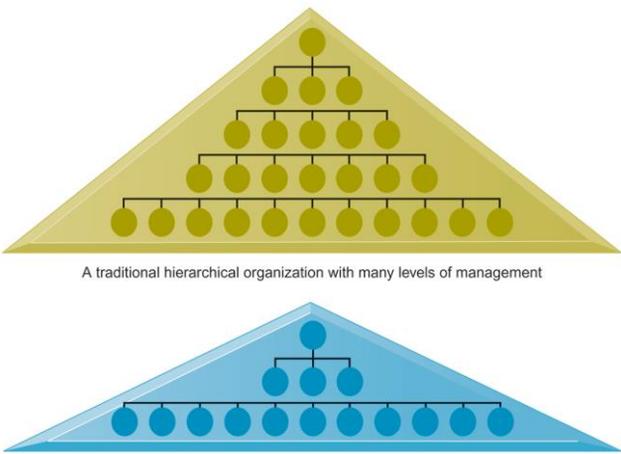


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FLATTENING ORGANIZATIONS

Information systems can reduce the number of levels in an organization by providing managers with information to supervise larger numbers of workers and by giving lower-level employees more decision-making authority.

FIGURE 3-6



A traditional hierarchical organization with many levels of management

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

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How Information Systems Impact Organizations and Business Firms

- **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.
 - Most common reason for failure of large projects is due to organizational and political resistance to change.

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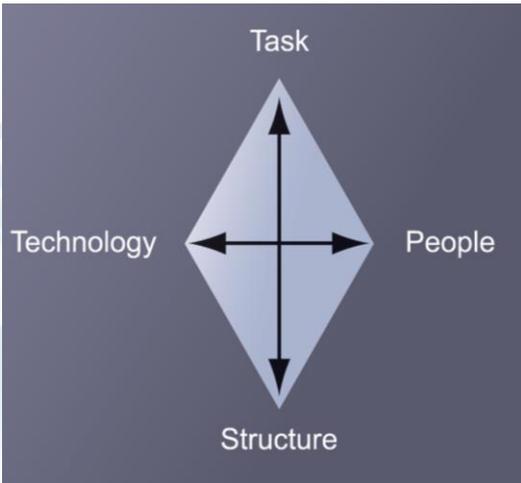


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ORGANIZATIONAL RESISTANCE AND THE MUTUALLY ADJUSTING RELATIONSHIP BETWEEN TECHNOLOGY AND THE ORGANIZATION

Implementing information systems has consequences for task arrangements, structures, and people. According to this model, to implement change, all four components must be changed simultaneously.

FIGURE 3-7



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How Information Systems Impact Organizations and Business Firms

- **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 Web site, saving millions of dollars in distribution costs

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How Information Systems Impact Organizations and Business Firms

- **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

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Using Information Systems to Achieve Competitive Advantage

- **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:**
 1. Traditional competitors
 2. New market entrants
 3. Substitute products and services
 4. Customers
 5. Suppliers

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PORTER'S COMPETITIVE FORCES MODEL

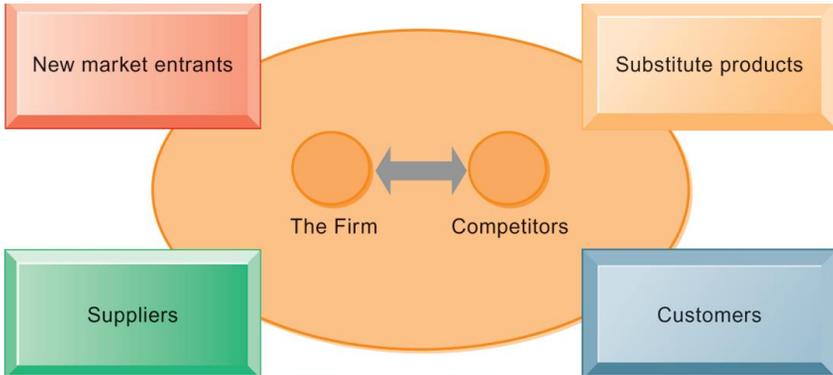


FIGURE 3-8 In Porter's competitive forces model, the strategic position of the firm and its strategies are determined not only by competition with its traditional direct competitors but also by four other forces in the industry's environment: new market entrants, substitute products, customers, and suppliers.

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Using Information Systems to Achieve Competitive Advantage

- **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.

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Using Information Systems to Achieve Competitive Advantage

- **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

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Using Information Systems to Achieve Competitive Advantage

- **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

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Using Information Systems to Achieve Competitive Advantage

- **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

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Using Information Systems to Achieve Competitive Advantage

- **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*
 - Example: Netflix, Amazon

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Interactive Session: Organizations

Technology Helps Starbucks Find New Ways to Compete
Read the Interactive Session and discuss the following questions

- Analyze Starbucks using the competitive forces and value chain models.
- What is Starbucks' business strategy? Assess the role played by technology in this business strategy.
- How much has technology helped Starbucks compete? Explain your answer.

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Using Information Systems to Achieve Competitive Advantage

- **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

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Using Information Systems to Achieve Competitive Advantage

- **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

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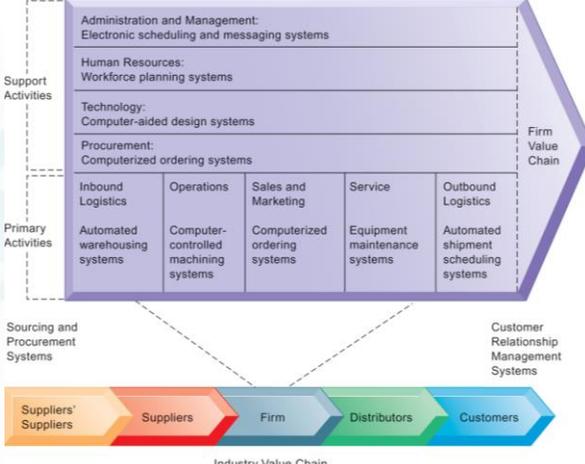
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THE VALUE CHAIN MODEL

This figure provides examples of systems for both primary and support activities of a firm and of its value partners that can add a margin of value to a firm's products or services.

FIGURE 3-9



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Interactive Session: Technology

Automakers Become Software Companies

Read the Interactive Session and discuss the following questions

- How is software adding value to automakers' products?
- How are the automakers benefiting from software-enhanced cars? How are customers benefiting?
- What value chain activities are involved in enhancing cars with software?
- How much of a competitive advantage is software providing for automakers? Explain your answer.

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Using Information Systems to Achieve Competitive Advantage

- **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**

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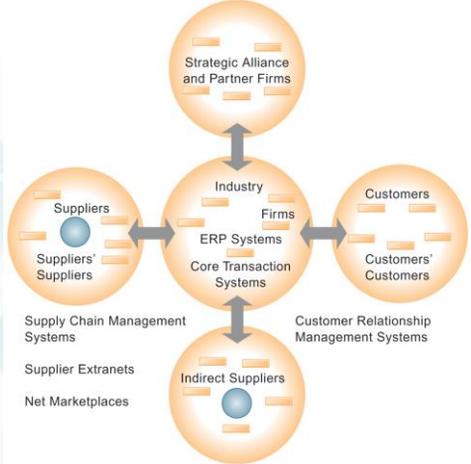


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THE VALUE WEB

The value web is a networked system that can synchronize the value chains of business partners within an industry to respond rapidly to changes in supply and demand.

FIGURE 3-10



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Using Information Systems to Achieve Competitive Advantage

- **Information systems can improve overall performance of business units by promoting synergies and core competencies**
 - **Synergies**
 - When output of some units 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

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Using Information Systems to Achieve Competitive Advantage

- **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**

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Using Information Systems to Achieve Competitive Advantage

- **Network-based strategies**
 - Take advantage of firm's abilities to network with each other
 - Include use of:
 - Network economics
 - Virtual company model
 - Business ecosystems

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Using Information Systems to Achieve Competitive Advantage

- **Traditional economics: Law of diminishing returns**
 - The more any given resource is applied to production, the lower the marginal gain in output, until a point is reached where the additional inputs produce no additional outputs
- **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

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Using Information Systems to Achieve Competitive Advantage

- **Virtual company strategy**
 - **Virtual company uses networks to ally with other companies to create and distribute products without being limited by traditional organizational boundaries or physical locations**
 - **Example: Li & Fung manages production, shipment of garments for major fashion companies, outsourcing all work to more than 7,500 suppliers**

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Using Information Systems to Achieve Competitive Advantage

- **Business ecosystems**
 - **Industry sets of firms providing related services and products**
 - Microsoft platform used by thousands of firms
 - Walmart's order entry and inventory management
 - **Keystone firms:** Dominate ecosystem and create platform used by other firms
 - **Niche firms:** Rely on platform developed by keystone firm
 - **Individual firms can consider how IT will help them become profitable niche players in larger ecosystems**

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AN ECOSYSTEM STRATEGIC MODEL

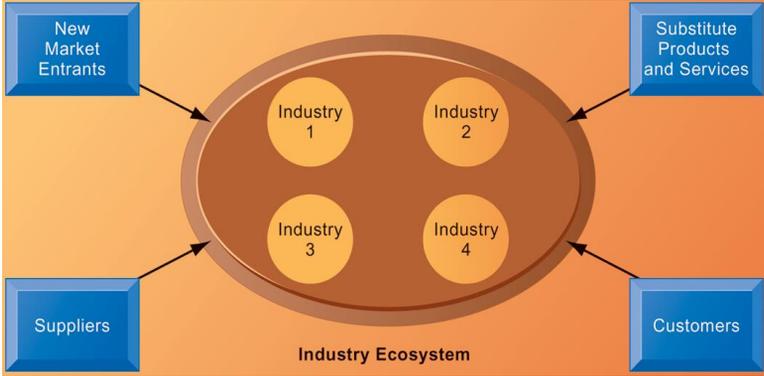


FIGURE 3-11 The digital firm era requires a more dynamic view of the boundaries among industries, firms, customers, and suppliers, with competition occurring among industry sets in a business ecosystem. In the ecosystem model, multiple industries work together to deliver value to the customer. IT plays an important role in enabling a dense network of interactions among the participating firms.

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Using Information Systems for Competitive Advantage: Management Issues

- **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

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