



## Chapter 3

# Information Systems, Organizations, and Strategy

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3.1



### Management Information Systems Chapter 3 Information Systems, Organizations, and Strategy

#### 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.

3.2



## Management Information Systems

Chapter 3 Information Systems, Organizations, and Strategy

### LEARNING OBJECTIVES (Continued)

- 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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## Management Information Systems

Chapter 3 Information Systems, Organizations, and Strategy

### eBay Fine-Tunes Its Strategy

- **Problem:** Losing market share to other online retailers, ultra-competitive and constantly changing marketplace.
- **Solutions:** Acquire other businesses and adjust its **business model** to maintain online dominance.
- **Purchase of PayPal, deal with Buy.com** allowed eBay to grow and diversify its business.
- Demonstrates IT's role in the development of eBay's organization as it expands and makes acquisitions.
- Illustrates the challenges of maintaining a competitive advantage in a fast-moving, constantly-changing marketplace.

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Organizations and Information Systems

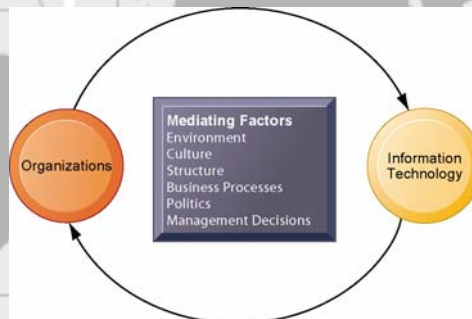
- **Information technology and organizations influence one another**
  - **Complex relationship influenced by organization's structure, business processes, politics, culture, environment, and management decisions**

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Organizations and Information Systems

**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.

Figure 3-1

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Organizations and Information Systems

• **What is an organization?**

• **Technical definition:**

- Stable, formal social structure that takes resources from environment and processes them to produce outputs
- A formal legal entity with internal rules and procedures, as well as a social structure

• **Behavioral definition:**

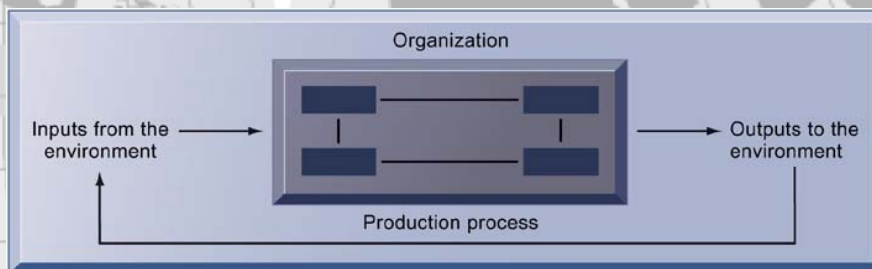
- A collection of rights, privileges, obligations, and responsibilities that is delicately balanced over a period of time through conflict and conflict resolution

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Organizations and Information Systems

**The Technical Microeconomic Definition of the Organization**



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.

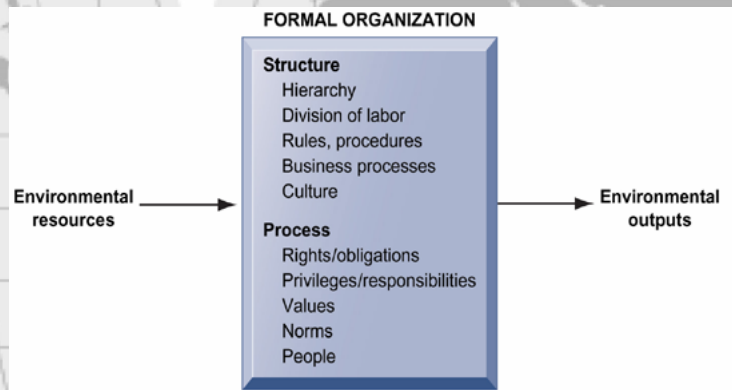
Figure 3-2

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Organizations and Information Systems

**The Behavioral View of Organizations**



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

Figure 3-3

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Organizations and Information Systems

• **Features of organizations**

- **All modern organizations share some characteristics, such as:**
  - Use of hierarchical structure
  - Accountability, authority in system of impartial decision making
  - Adherence to principle of efficiency
  - Other features include: Routines and business processes and 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

3.11



Organizations and Information Systems

**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.

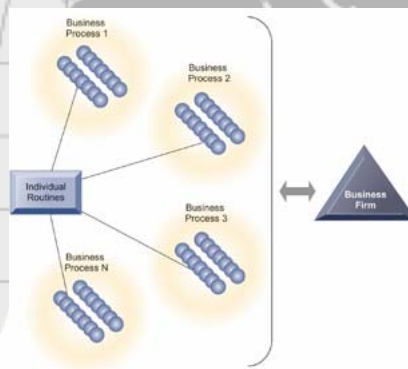


Figure 3-4

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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

3.14



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

3.15



Organizations and Information Systems

**Environments and Organizations  
Have a Reciprocal Relationship**

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.

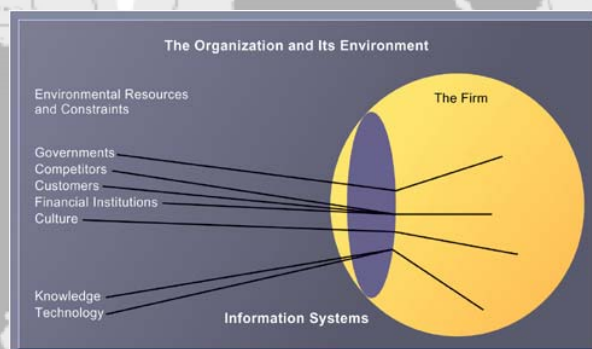


Figure 3-5

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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

- **Organizational structure**
  - Five basic kinds of 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
- 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 cost of participating in market (transaction costs)
  - IT lowers market transaction costs for firm, making it worthwhile for firms to transact with other firms rather than grow the number of employees

3.21



How Information Systems Impact Organizations and Business Firms

**The Transaction Cost Theory of the Impact of Information Technology on the Organization**



Firms traditionally grew in size to reduce transaction costs. IT potentially reduces transaction costs for a given size.

Figure 3-6

3.22



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

**The Agency Cost Theory of the Impact of Information Technology on the Organization**

As firms grow in size and complexity, traditionally they experience rising agency costs.



Figure 3-7

3.24



## Management Information Systems

Chapter 3 Information Systems, Organizations, and Strategy

### How Information Systems Impact Organizations and Business Firms

- **Organizational and behavioral impacts**
  - **IT flattens organizations**
    - Decision making pushed to lower levels
    - Fewer managers 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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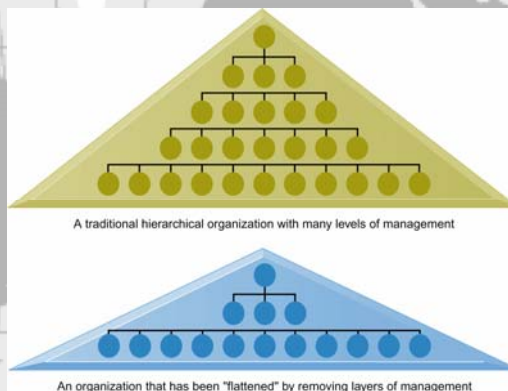


## Management Information Systems

Chapter 3 Information Systems, Organizations, and Strategy

### How Information Systems Impact Organizations and Business Firms

#### 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 3-8

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How Information Systems Impact Organizations and Business Firms

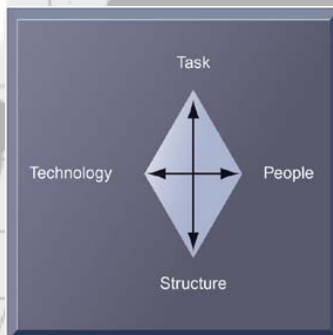
- **Organizational resistance to change**
  - Information systems become bound up in organizational politics because they influence access to a key resource – information
  - Information systems potentially change an organization's structure, culture, politics, and work
  - Most common reason for failure of large projects is due to organizational and political resistance to change

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How Information Systems Impact Organizations and Business Firms

**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 3-9

3.28



## Management Information Systems

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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 corporate Web site, saving millions of dollars in distribution costs

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## Management Information Systems

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### How Information Systems Impact Organizations and Business Firms

- **Central organizational factors to consider when 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

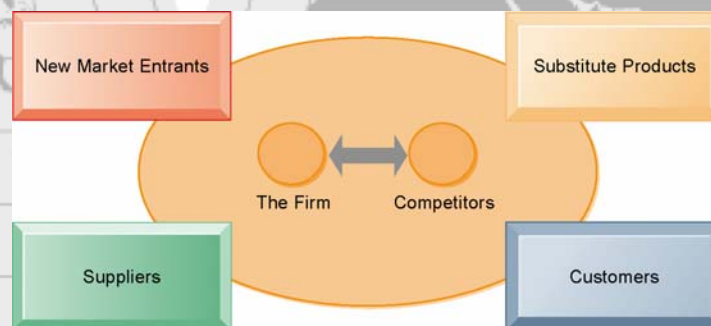
- **Why do some firms become leaders within their industry?**
- **Michael Porter's competitive forces model**
  - Provides general view of firm, its competitors, and environment
  - Five competitive forces shape fate of firm
    - Traditional competitors
    - New market entrants
    - Substitute products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

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Using Information Systems to Achieve Competitive Advantage

**Porter's Competitive Forces Model**



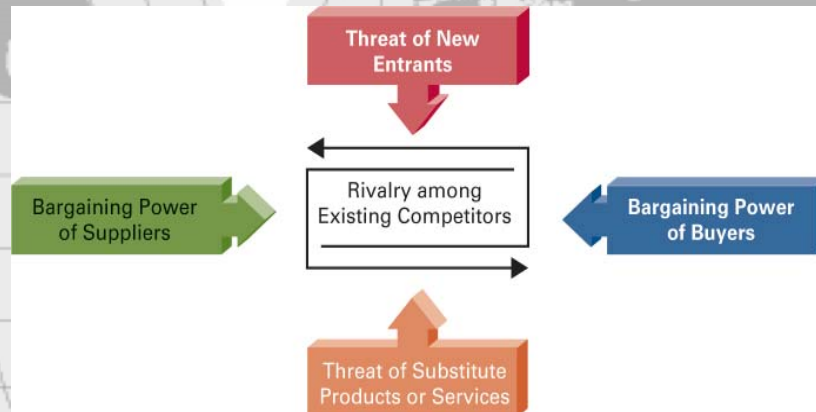
In Porter's competitive forces model, the strategic position of the firm and its strategies are determined not only by competition with its traditional direct competitors but also by four forces in the industry's environment: new market entrants, substitute products, customers, and suppliers.

Figure 3-10

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## PORTER'S FIVE FORCES MODEL



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## Buyer Power

- **Buyer power** – high when buyers have many choices and low when their choices are few
- Competitive advantages are created to get buyers to stay with a given company
  - Netflix – set up and maintain your movie list
  - United Airlines – frequent flyer program
  - Apple iTunes – buy/manage your music
  - Dell – customize a computer purchase

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## Buyer Power

- **Competitive advantage** – providing a product or service in a way that customers value more than what the competition is able to do
- **First-mover advantage** – significant impact on gaining market share by being the first to market with a competitive advantage
- All competitive advantages are fleeting
  - E.G., all airlines now have frequent flyer programs

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## Supplier Power

- **Supplier power** – high when buyers have few choices and low when choices are many
- The opposite of buyer power



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## Threat of Substitute Products and Services

- **Threat of substitute products and services** – high when there are many alternatives for buyers and low when there are few alternatives
- Switching costs can reduce this threat
- **Switching cost** – a cost that makes buyers reluctant to switch to another product/service
  - Long-term contract with financial penalty
  - Great service
  - Personalized products based on purchase history

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## Threat of New Entrants

- **Threat of new entrants** – high when it is easy for competitors to enter the market and low when entry barriers are significant
- **Entry barrier** – product or service feature that customers have come to expect and that must be offered by an entering organization
  - Banking – ATMs, online bill pay, etc

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## Rivalry Among Existing Competitors

- ***Rivalry among existing competitors*** – high when competition is fierce and low when competition is more complacent
- General trend is toward more competition in almost all industries
- IT has certainly intensified competition in all sectors of business

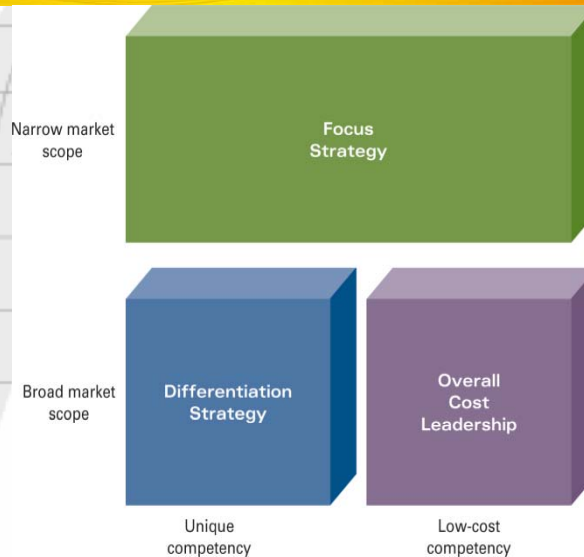
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## PORTER'S THREE GENERIC STRATEGIES

- Porter identified 3 generic business strategies for beating the competition
1. Overall cost leadership
  2. Differentiation
  3. Focus



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Using Information Systems to Achieve Competitive Advantage

### Can Technology Save Soldiers' Lives in Iraq?

- **Read the Interactive Session: Management, and then discuss the following questions:**
  - What features of organizations are relevant for explaining the performance of information systems during the Iraq War?
  - What difficulties did U.S. military forces in Iraq encounter with information systems? What management, organization, and technology factors contributed to these difficulties?
  - Describe TIGR and explain why it has been so beneficial to U.S. patrol groups in Iraq.
  - Why is TIGR an example of a horizontal technology?
  - How helpful will TIGR be in future military campaigns? Explain your answer.

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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, switching costs
- **New market entrants**
  - Some industries have high barriers to entry, e.g. 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, e.g. 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 while enhancing quality and level of service
  - Examples: Wal-Mart, Dell
- **Product differentiation**
  - Enable new products or services, greatly change customer convenience and experience
  - Examples: Google, Land's End, Apple iPhone

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## Management Information Systems

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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
- **Strengthen customer and supplier intimacy**
  - Use information systems to develop strong ties and loyalty with customers and suppliers; increase switching costs
  - Example: Chrysler, Amazon

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Using Information Systems to Achieve Competitive Advantage

### **Can Detroit Make the Cars Customers Want?**

- **Read the Interactive Session: Organizations, and then discuss the following questions:**
  - Why is AutoNation having a problem with its inventory? Why is this also a problem for auto manufacturers such as GM, Ford, and Chrysler? How is this problem impacting the business performance of AutoNation and of the auto manufacturers?
  - What pieces of data does AutoNation need to determine what cars to stock in each of its dealerships?
  - What is AutoNation's solution to its problem?

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Using Information Systems to Achieve Competitive Advantage

- **The Internet's impact on competitive advantage**
  - Transformation, destruction, threat to some industries
    - E.g. travel agency, printed encyclopedia, newspaper
  - 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

- **Business value chain model**
  - Views 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

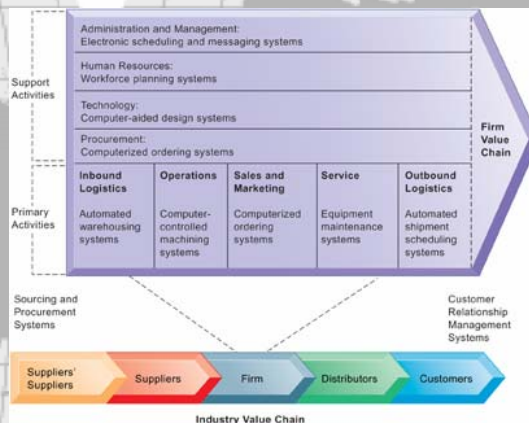
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Using Information Systems to Achieve Competitive Advantage

**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 3-11

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## Management Information Systems

### Chapter 3 Information Systems, Organizations, and Strategy

#### 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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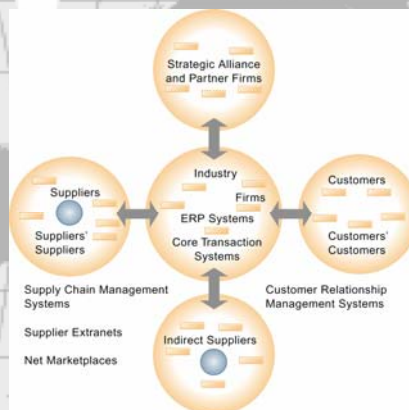


## Management Information Systems

### Chapter 3 Information Systems, Organizations, and Strategy

#### Using Information Systems to Achieve Competitive Advantage

### 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 3-12

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## Management Information Systems

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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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## Management Information Systems

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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

3.54



- **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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- **Network economics**
  - **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
  - E.g. Li & Fung manages production, shipment of garments for major fashion companies, outsourcing all work to over 7,500 suppliers

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## Management Information Systems

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### Using Information Systems to Achieve Competitive Advantage

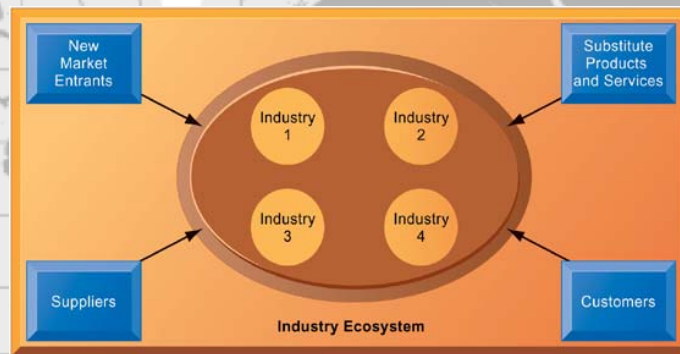
- **Business ecosystems**
  - Industry sets of firms providing related services and products
    - Microsoft platform used by thousands of firms for their own products
    - Wal-Mart's order entry and inventory management system
  - **Keystone firms:** Dominate ecosystem and create platform used by other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

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Using Information Systems to Achieve Competitive Advantage

**An Ecosystem Strategic Model**



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.

Figure 3-13

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Using Systems for Competitive Advantage: Management Issues

- **Sustaining competitive advantage**
  - Because competitors can retaliate and copy strategic systems, competitive advantage is not always sustainable; systems may become tools for survival
- **Performing strategic systems analysis**
  - What is structure of industry?
  - What are value chains for this firm?
- **Managing strategic transitions**
  - Adopting strategic systems requires changes in business goals, relationships with customers and suppliers, and business processes

3.60