Achieving Competitive Advantage with Information Systems

STUDENT LEARNING OBJECTIVES

- **How do Porter's competitive forces model, the value chain model, synergies, core competencies, and network-based strategies help companies use information systems for competitive advantage?**

- **How do information systems help business globally?**

- **How do information systems help businesses compete using quality and design?**

- **What is the role of business process management (BPM) in enhancing competitiveness?**

Learning Tracks

1. Challenges of Information Systems for Competitive Advantage
2. Primer on Business Process Design and Documentation
3. Primer on Business Process Management

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

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

Should T.J. Maxx Sell Online?

- ## **Problem**
  - ### **Traditional e-commerce formula has not been as effective due to unpredictable inventory, large network of suppliers, but ignoring e-commerce loses market share to competitors.**

- ## **Solutions**
  - ### **Acquisition of off-price Internet retailer Sierra Trading Post to gain expertise**
  - ### **Newly launched site preserves feel of stores**
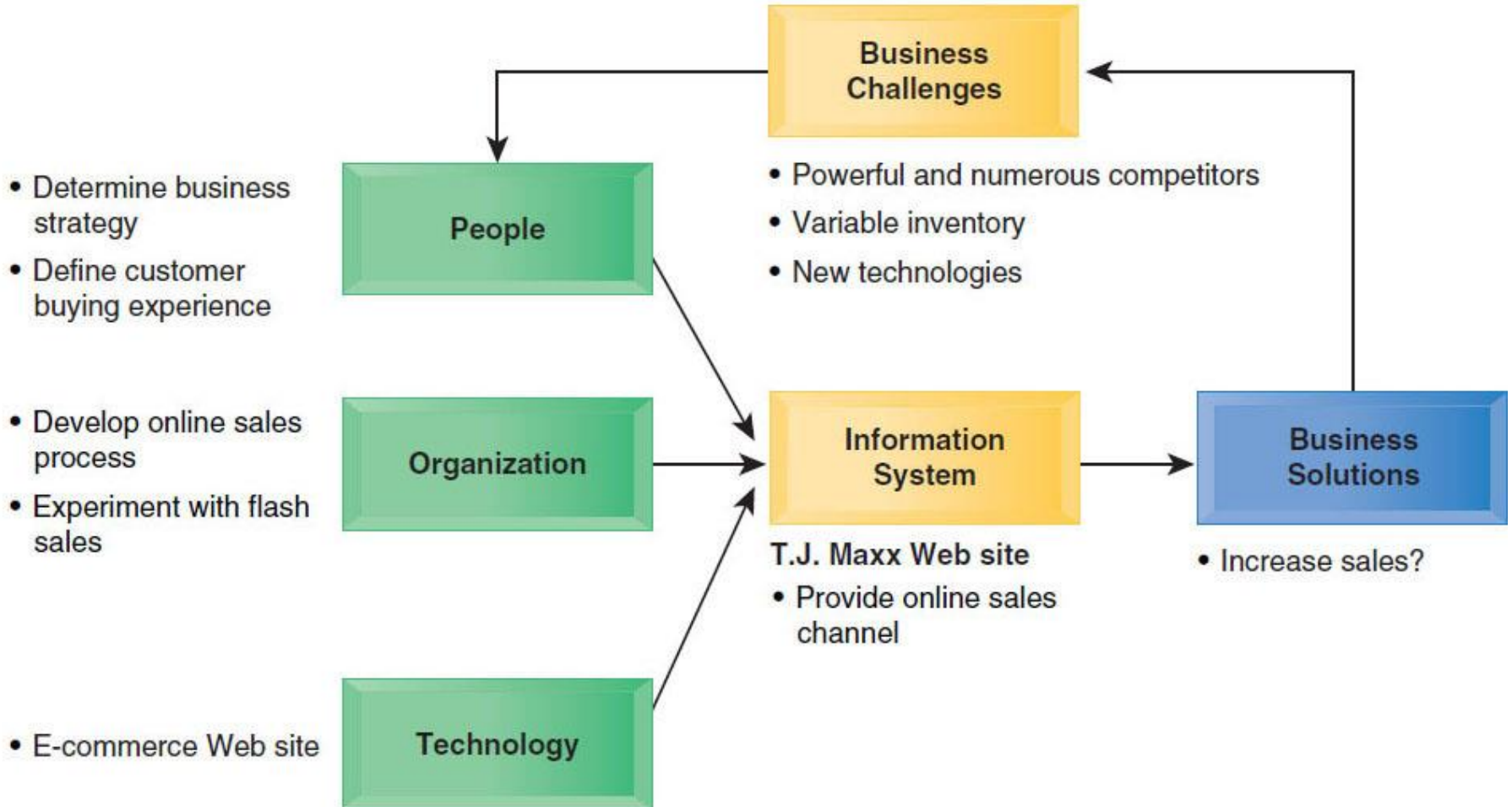 - ### **Better potential profit margins**

- **Information systems** like those used in T.J. Maxx's new site help businesses compete.

- Illustrates digital technology's role in gaining and maintaining a competitive advantage.

- Illustrates how difficult it is to sustain competitive advantage, especially in an arena of quickly changing technologies.

Should T.J. Maxx Sell Online?

- Determine business strategy
- Define customer buying experience

- Develop online sales process
- Experiment with flash sales

- E-commerce Web site

People

Organization

Technology

Business Challenges

- Powerful and numerous competitors
- Variable inventory
- New technologies

Information System

T.J. Maxx Web site
- Provide online sales channel

Business Solutions

- Increase sales?

Porter's Competitive Forces Model

- **Five competitive forces shape fate of firm**
  1. **Traditional competitors**
     - Competitors in market space continuously devise new products, new efficiencies, switching costs.
  2. **New market entrants**
     - Some industries have low barriers to entry:
       - E.g., food industry versus microchip industry
     - Newer companies may have advantages:
       - Newer equipment, younger workforce, and so on.

Porter's Competitive Forces Model

3. Substitute products and services

- Substitutes customers can purchase if your prices too high.

- E.g., Internet music service versus CDs.

4. Customers

- Can customers easily switch to competitor's products?

- Can customers force firm and competitors to compete on price alone (transparent marketplace).

5. Suppliers

- The more suppliers a firm has, the greater control it can exercise over suppliers.

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.
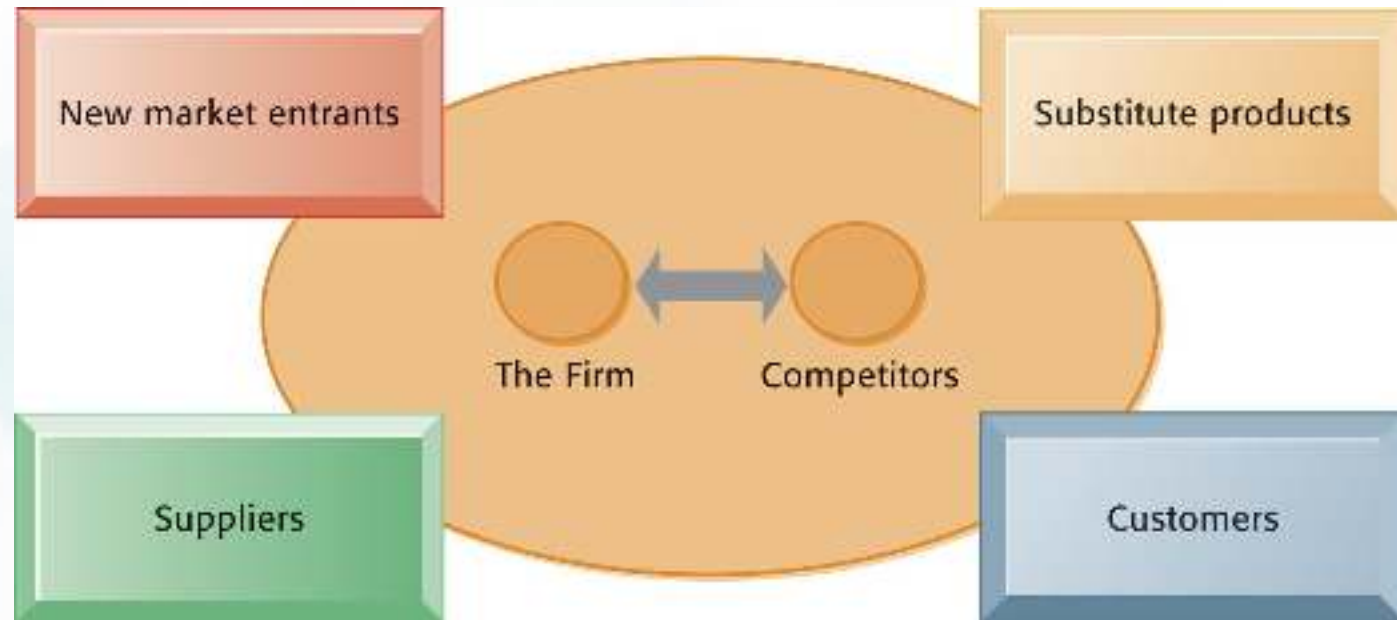
New market entrants

Substitute products

The Firm ↔ Competitors

Suppliers

Customers

Figure 3.1

Information System Strategies for Dealing with Competitive Forces

- ## Basic strategy: Align IT with business objectives

  - **75% of businesses fail to align their IT with their business objectives, leading to lower profitability.**

  - **To align IT:**

    - **Identify business goals and strategies.**

    - **Break strategic goals into concrete activities and processes.**

    - **Identify metrics for measuring progress.**

    - **Determine how IT can help achieve business goals.**

    - **Measure actual performance.**

Information System Strategies for Dealing with Competitive Forces

- **Low-cost leadership**

  - Use information systems to achieve the lowest operational costs and the lowest prices.

  - **E.g. Walmart**

    - Inventory replenishment system sends orders to suppliers when purchase recorded at cash register.

    - Minimizes inventory at warehouses, operating costs.

    - Efficient customer response system.

Information System Strategies for Dealing with Competitive Forces

- **Product differentiation**

  - Use information systems to enable new products and services, or greatly change the customer convenience in using your existing products and services.

  - E.g., Google's continuous innovations, Apple's iPhone.

  - Use information systems to customize, personalize products to fit specifications of individual consumers.

    - E.g., Nike's iD program for customized sneakers

Interactive Session: Technology
Automakers Become Software Companies

- **Read the Interactive Session and then 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?

Information System Strategies for Dealing with Competitive Forces

- **Focus on market niche**

  - Use information systems to enable specific market focus, and serve narrow target market better than competitors.

    - **Analyzes customer buying habits, preferences**

    - **Advertising pitches to smaller and smaller target markets**

  - E.g., Hilton Hotel's OnQ System

    - **Analyzes data collected on guests to determine preferences and guest's profitability**

Information System Strategies for Dealing with Competitive Forces

- **Strengthen customer and supplier intimacy.**
  - Strong linkages to customers and suppliers increase switching costs and loyalty

  - **Toyota**: uses IS to facilitate direct access from suppliers to production schedules

    - Permits suppliers to decide how and when to ship supplies to plants, allowing more lead time in producing goods.

  - **Amazon**: keeps track of user preferences for purchases, and recommends titles purchased by others

Information System Strategies for Dealing with Competitive Forces

- **Some companies pursue several strategies at same time.**

  - **Walmart, Apple, Amazon**

- **Successfully using IS to achieve competitive advantage requires precise coordination of technology, organizations, and people.**

The Internet's Impact on Competitive Advantage

- **Enables new products and services**

- **Encourages substitute products**

- **Lowers barrier to entry**

- **Changes balance of power of customers and suppliers**

- **Transforms some industries**

- **Creates new opportunities for creating new markets, building brands, and large customer bases**

The Business Value Chain Model

- **Highlights specific activities in a business where competitive strategies can best be applied and where information systems are likely to have a strategic impact.**

    - **Primary activities**

    - **Support activities**

    - **Benchmarking**

    - **Best practices**

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 would add a margin of value to a firm's products or services.
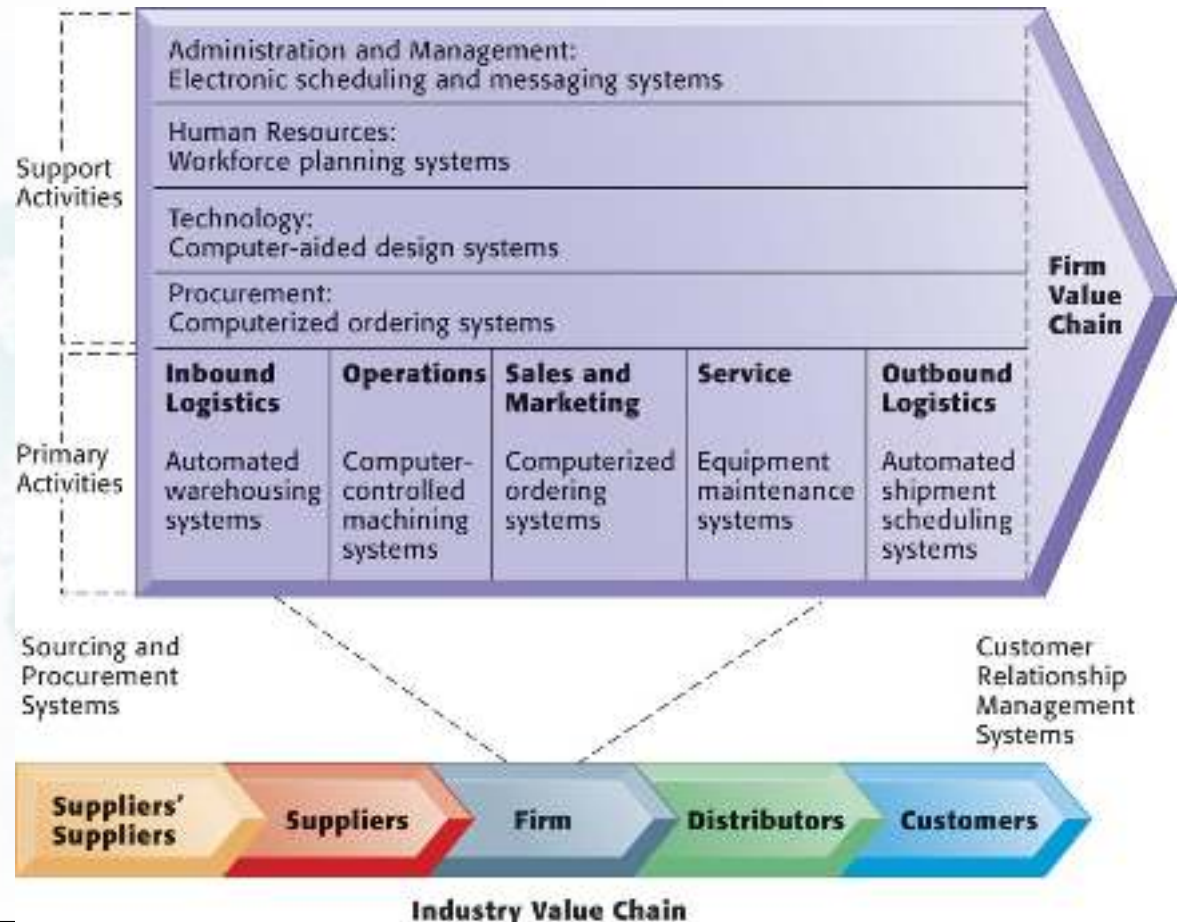
Figure 3.2

Extending the Value Chain: The Value Web

- **A firm's value chain is linked to the value chains of its suppliers, distributors, and customers.**

- **Value web**

  - **Collection of independent firms that use information technology to coordinate their value chains to produce a product collectively.**

  - **Value webs are flexible and adapt to changes in supply and demand.**

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.
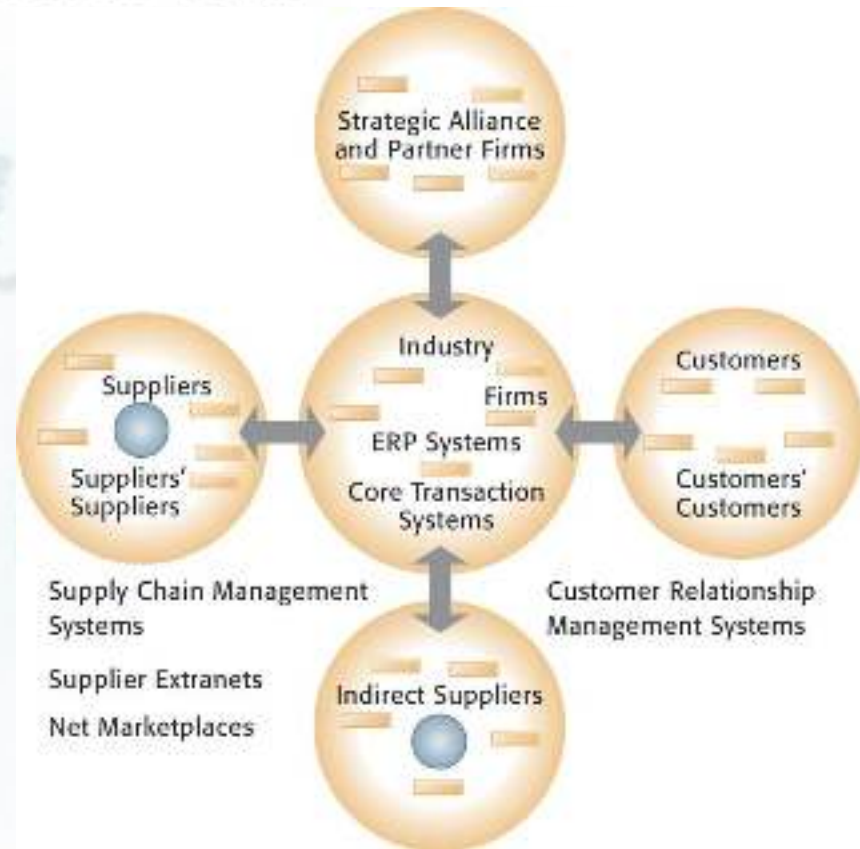

Figure 3.3

Synergies, Core Competencies, and Network-Based Strategies

- **Synergies:**

  - **When output of some units can be used as inputs to other units**

  - **When two firms can pool markets and expertise (e.g., recent bank mergers)**

  - **Lower costs and generate profits**

  - **Enabled by information systems that ties together disparate units so they act as whole**

Synergies, Core Competencies, and Network-Based Strategies

- **Core competency:**

  - **Activities for which firm is world-class leader.**

    - **E.g., world's best miniature parts designer, best package delivery service.**

  - **Relies on knowledge that is gained over many years of experience as well as knowledge research.**

  - **Any information system that encourages the sharing of knowledge across business units enhances competency.**

    - **E.g., Procter & Gamble uses intranet to help people working on similar problems share ideas and expertise.**

Synergies, Core Competencies, and Network-Based Strategies

- **Network-based strategies:**

  - **Network economics:**

    - Marginal costs of adding another participant are near zero, whereas marginal gain is much larger

    - E.g., larger number of participants in Internet, greater value to all participants

  - **Virtual company:**

    - Uses networks to link people, resources, and ally with other companies to create and distribute products without traditional organizational boundaries or physical locations

Disruptive Technologies: Riding the Wave

- **Disruptive technologies:**
  - **Technologies with disruptive impact on industries and businesses, rendering existing products, services and business models obsolete:**
    - **Personal computers**
    - **World Wide Web**
    - **Internet music services**
  - **First movers versus fast followers**
    - **First movers of disruptive technologies may fail to see potential, allowing second movers to reap rewards (fast followers)**

The Internet and Globalization

- **Prior to the Internet, competing globally was only an option for huge firms able to afford factories, warehouses, and distribution centers abroad.**

- **The Internet drastically reduces costs of operating globally.**

- **Globalization benefits:**

  - **Scale economies and resource cost reduction**

  - **Higher utilization rates, fixed capital costs, and lower cost per unit of production**

  - **Speeding time to market**

How do information systems help businesses compete globally?
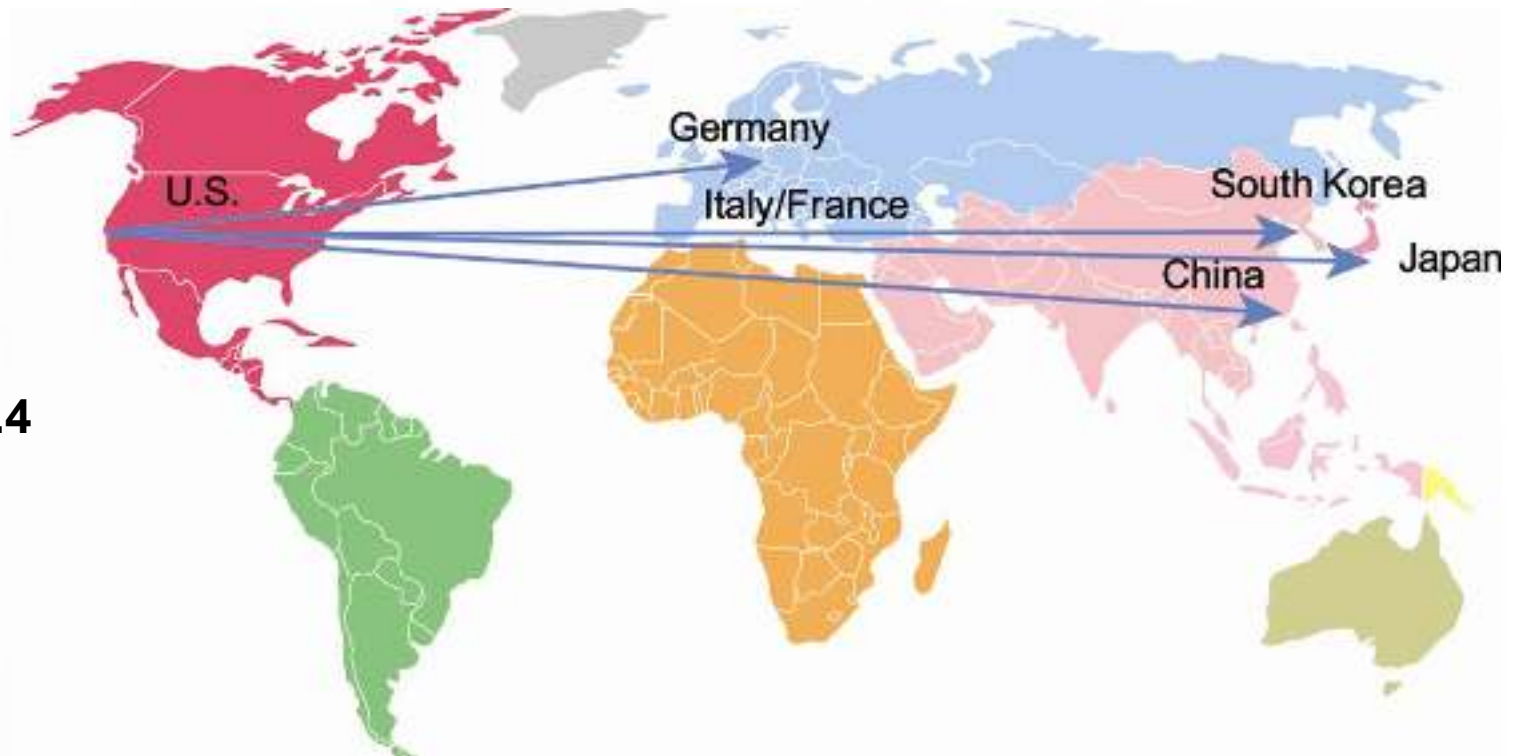
Apple iPhone's Global Supply Chain

Figure 3.4

Apple designs the iPhone in the United States, and relies on suppliers in the United States, Germany, Italy, France, and South Korea for other parts. Final assembly occurs in China

Global Business and System Strategies

- **Domestic exporters**
  - **Heavy centralization of corporate activities in home country**
- **Multinationals**
  - **Concentrates financial management at central home base while decentralizing production, sales, and marketing to other countries**
- **Franchisers**
  - **Product created, designed, financed, and initially produced in home country but rely on foreign units for further production, marketing, and human resources**
- **Transnationals**
  - **Regional (not national) headquarters and perhaps world headquarters; optimizing resources as needed**

Global System Configuration

- **Centralized systems:**

  - All development and operation at domestic home base

- **Duplicated systems:**

  - Development at home base but operations managed by autonomous units in foreign locations

- **Decentralized systems:**

  - Each foreign unit designs own solutions and systems

- **Networked systems:**

  - Development and operations occur in integrated and coordinated fashion across all units

How do information systems help businesses compete globally?

Global Business Organization Systems Configurations

SYSTEM CONFIGURATION	Strategy			
	Domestic Exporter	Multinational	Franchiser	Transnational
Centralized	X			
Duplicated			X	
Decentralized	x	X	x	
Networked		x		X

The large Xs show the dominant patterns, and the small Xs show the emerging patterns. For instance, domestic exporters rely predominantly on centralized systems, but there is continual pressure and some development of decentralized systems in local marketing regions.

Figure 3.5

Essentials of Management Information Systems
Chapter 3 Achieving Competitive Advantage with Information Systems

How do information systems help businesses compete using quality and design?

What Is Quality?

- **Producer perspective:**
  - Conformance to specifications and absence of variation from specs

- **Customer perspective:**
  - Physical quality (reliability), quality of service, psychological quality

- **Total quality management (TQM):**
  - Quality control is end in itself
  - All people, functions responsible for quality

- **Six sigma:**
  - Measure of quality: 3.4 defects/million opportunities

Essentials of Management Information Systems
Chapter 3 Achieving Competitive Advantage with Information Systems

How do information systems help businesses compete using quality and design?

How Information Systems Improve Quality

- **Reduce cycle time and simplify production process.**

- **Benchmark**

- **Use customer demands to improve products and services.**

- **Improve design quality and precision.**

  - Computer-aided design (CAD) systems

- **Improve production precision and tighten production tolerances.**

How Firms Compete on Business Processes: BPM

- **Technology alone is often not enough to make companies more efficient, competitive, or quality oriented**

- **Organizational changes are often necessary, from minor changes in work habits to redesigning entire business processes**

- **BPM: Business process management**
    - Aims to continuously improve processes
    - Uses variety of tools and methodologies to:
        - Understand existing processes
        - Design and optimize new processes

- **Steps in BPM**

    1. Identify processes for change

    2. Analyze existing processes

    3. Design new process

    4. Implement new process

    5. Continuous measurement
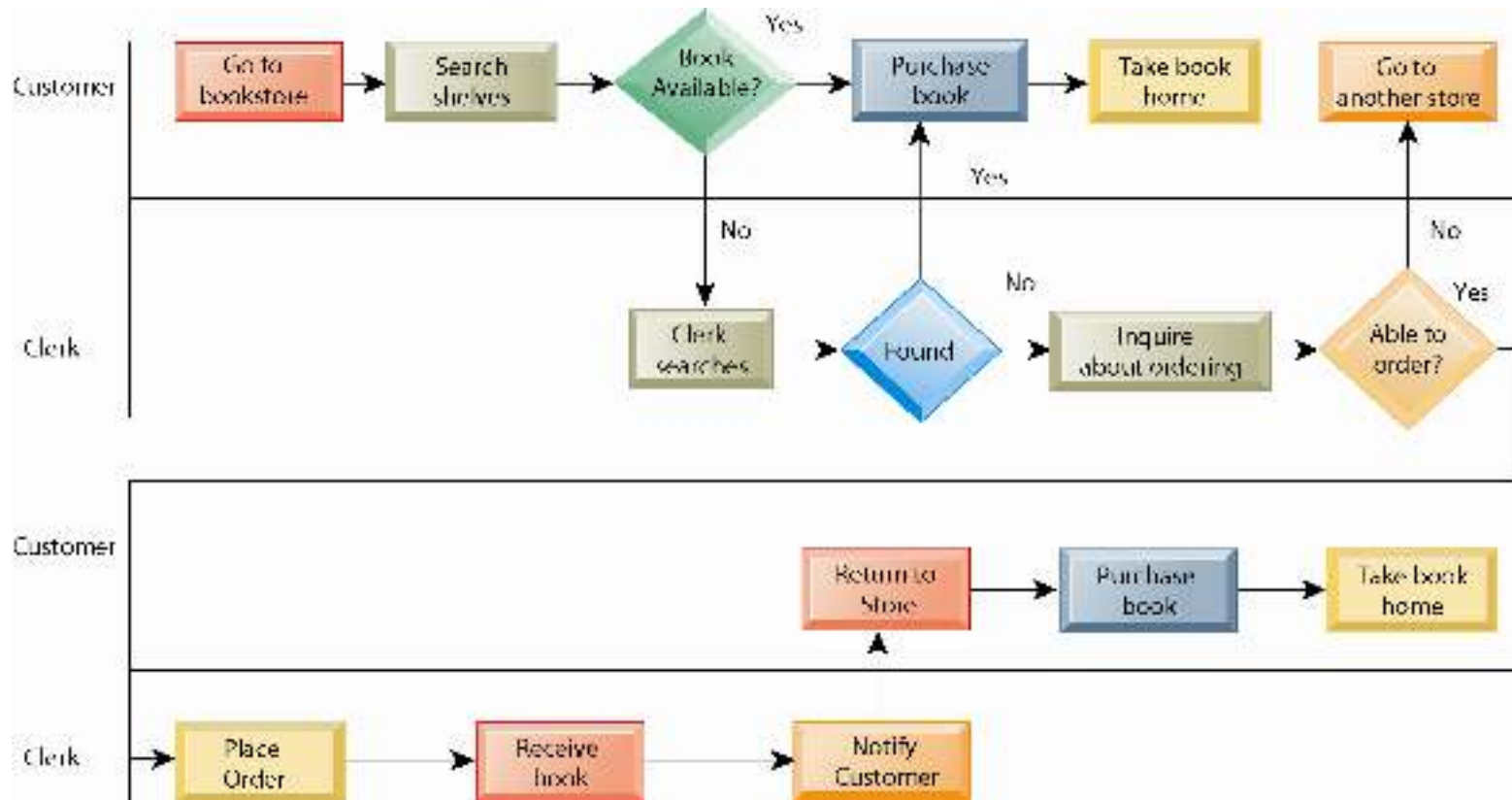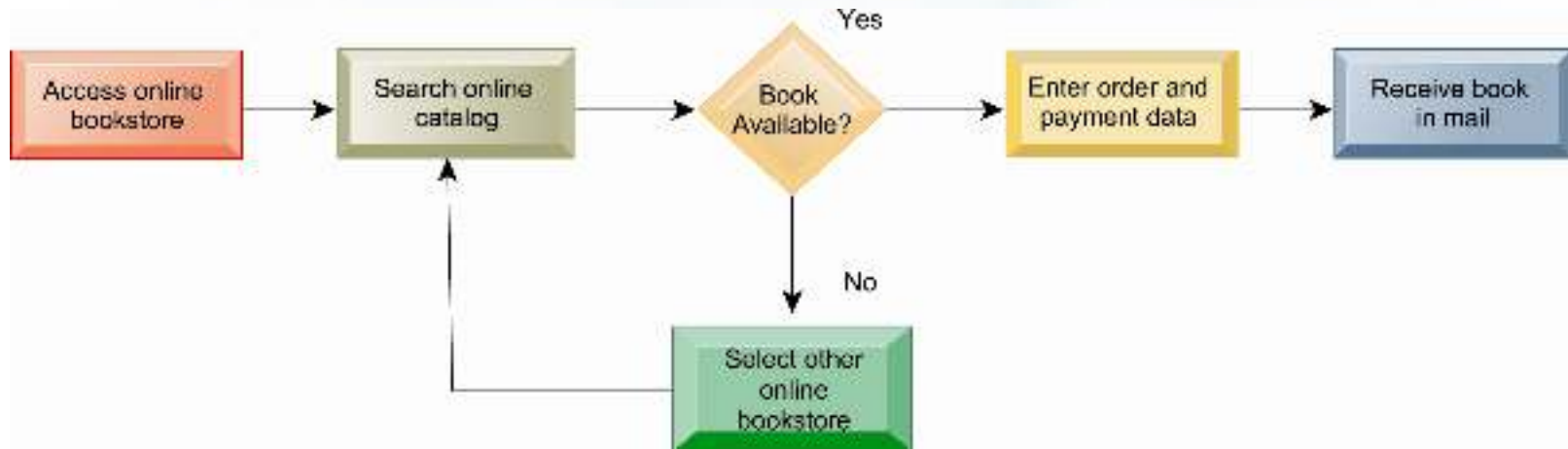
How Firms Compete on Business Processes: BPM

Figure 3.6

How Firms Compete on Business Processes: BPM

Figure 3.7

Interactive Session: Organizations
Identifying Market Niches in the Age of Big Data

- Describe the kinds of data being analyzed by the companies in this case.

- How is this fine-grained data analysis improving operations and decision making in the companies described in this case? What business strategies are being supported?

- Are there any disadvantages to mining customer data? Explain your answer.

- How do you feel about airlines mining your inflight data? Is this any different from companies mining your credit card purchases or Web surfing?

Business Process Reengineering

- **A radical form of fast change**

- **Not continuous improvement, but elimination of old processes, replacement with new processes, in a brief time period**

- **Can produce dramatic gains in productivity**

- **Can produce more organizational resistance to change**