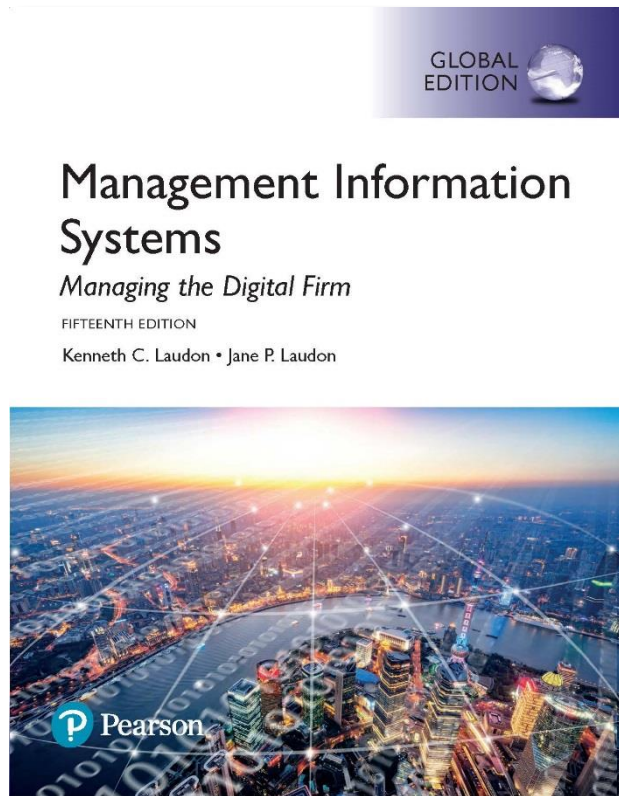


Management Information Systems: Managing the Digital Firm

Fifteenth edition



Chapter 3 Information Systems, Organizations, and Strategy

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Courtesy:

Most slides are mainly adopted from:

- Kenneth C. Laudon and Jane P. Laudon. **Management Information Systems: Managing the Digital Firm**. 15th Edition. Pearson, 2018.
- Kenneth C. Laudon and Jane P. Laudon. **Essentials of Management Information Systems**. 10th Edition, Pearson, 2013.

Learning Objectives

- Which **features** of **organizations** do managers need to know about to build and use information systems successfully?
- What is the impact of information systems on **organizations**?
- 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?
- What are the challenges posed by strategic information systems and how should they be addressed?

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.

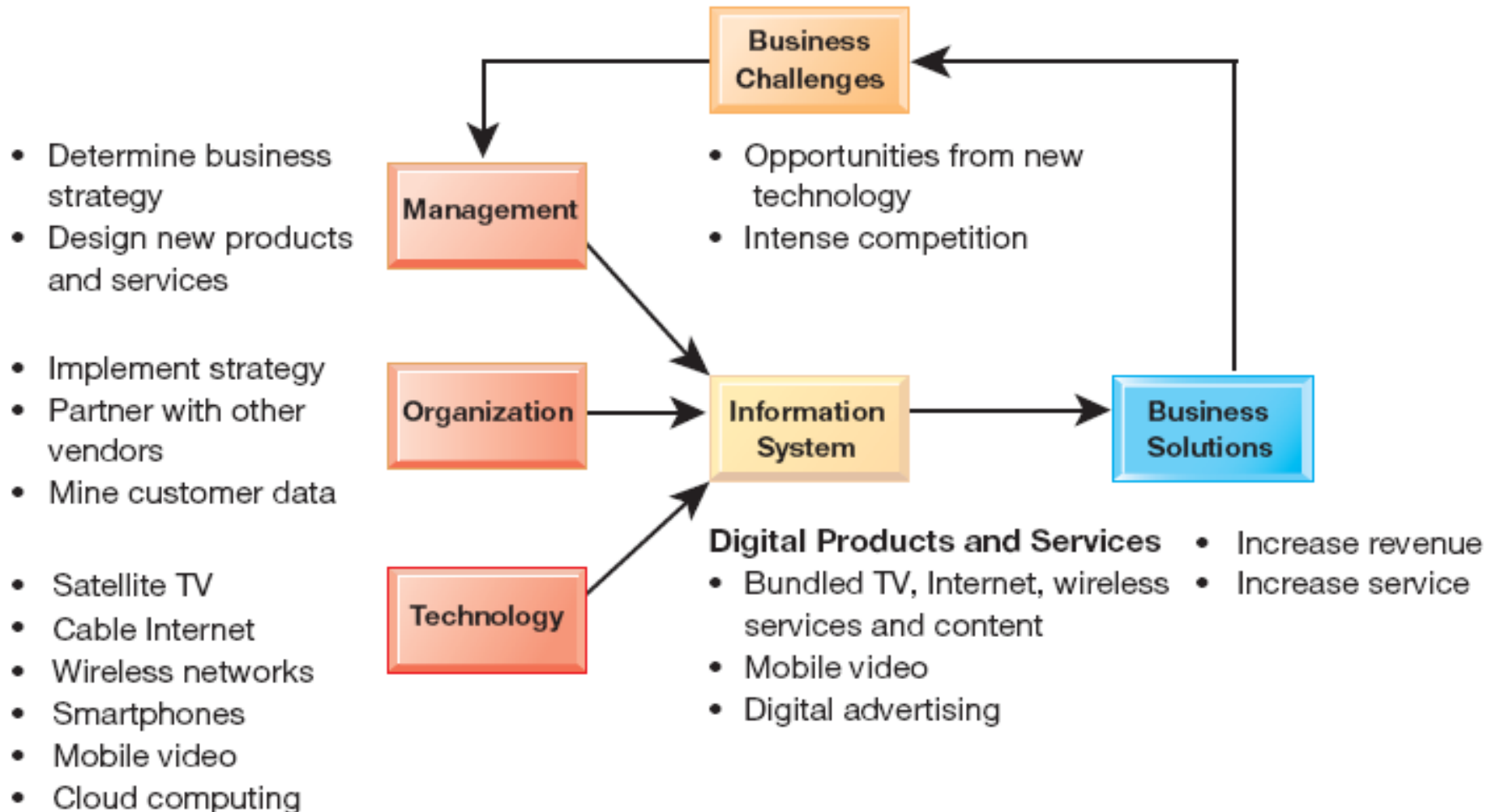
- **Solutions**

- 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**

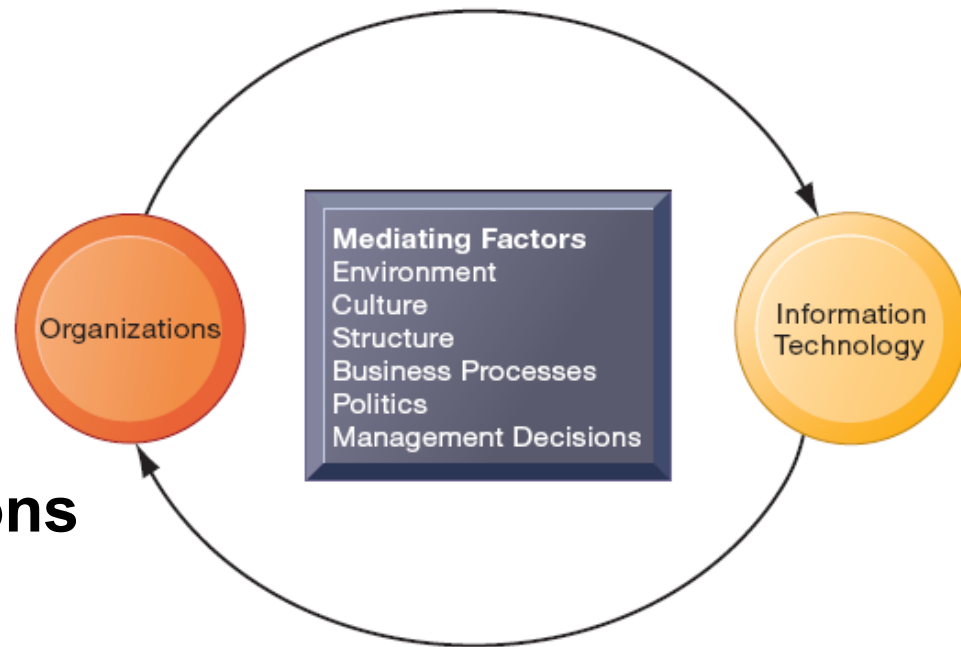
- like those used in T.J. Maxx's new site help businesses compete.
- Illustrates digital technology's role in gaining and maintaining a competitive advantage.
- Illustrates how difficult it is to sustain competitive advantage, especially in an arena of quickly changing technologies.

Tate & Lyle Company



Features of Organizations

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



The Technical Microeconomic Definition Of The Organization

- An **organization** is a stable, formal social structure that takes resources (Capital and labor) from the environment and processes them to produce outputs (products and services).

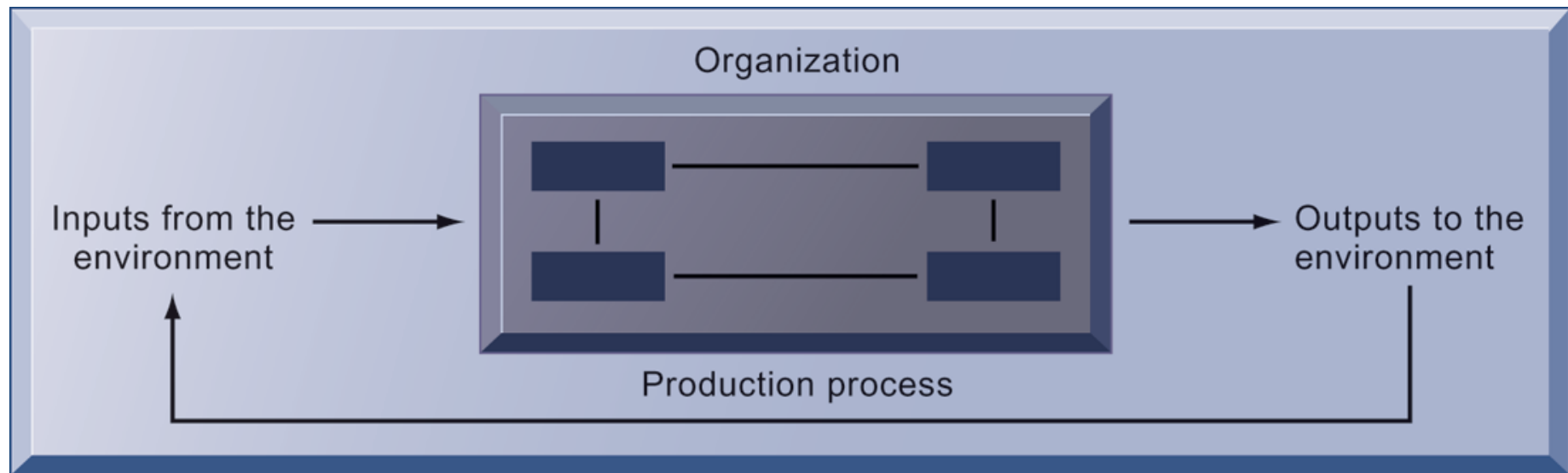


FIGURE 3-2. In the microeconomic definition of organizations, capital and labor (the primary production factors provided by the environment) are transformed by the firm through the production process into products and services (outputs to the environment). The products and services are consumed by the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

Features of Organizations

- Features of organizations
 - Use of hierarchical structure
 - Accountability, authority in system of impartial decision making
 - Bureaucracies with clear-cut divisions of labor and specialization.
 - Adherence to principle of efficiency
 - Routines and business processes
 - Organizational politics, culture, environments, and structures

Features of Organizations

- 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

Features of Organizations

- 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.

Disruptive technologies

- Technologies with **disruptive** impact on industries, markets and businesses, rendering existing products, services and business models obsolete:
 - Examples: personal computers, word processing software, the Internet, the PageRank algorithm, Internet music services
- First movers and fast followers
 - First movers—inventors of disruptive technologies: **may fail to see potential**
 - Fast followers—firms with the size and resources to capitalize on that technology: **may allow to reap rewards**

Features of Organizations

(Mintzberg, 1971).

- Five basic kinds of organizational structure
 - **Entrepreneurial**: young, small, fast-changing, simple, single CEO
 - Small start-up business
 - **Machine bureaucracy**: large bureaucracy, slow changing, standard products, centralized management
 - Midsize manufacturing firm
 - **Divisionalized bureaucracy**: multiple machine bureaucracies, all topped by one central headquarters.
 - Fortune 500 firms
 - **Professional bureaucracy**: goods and services depend on the expertise and knowledge of professionals, weak centralized authority.
 - Law firms, school systems, hospitals
 - **Adhocracy**: Task force organization, respond to rapidly changing environments, large groups of specialists, weak central management
 - Consulting firms, Rand Corporation think tank

Features of Organizations

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

The Impact of Information Systems on Organizations

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

The Impact of Information Systems on Organizations

- 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.

[Link](#) to bank agencies

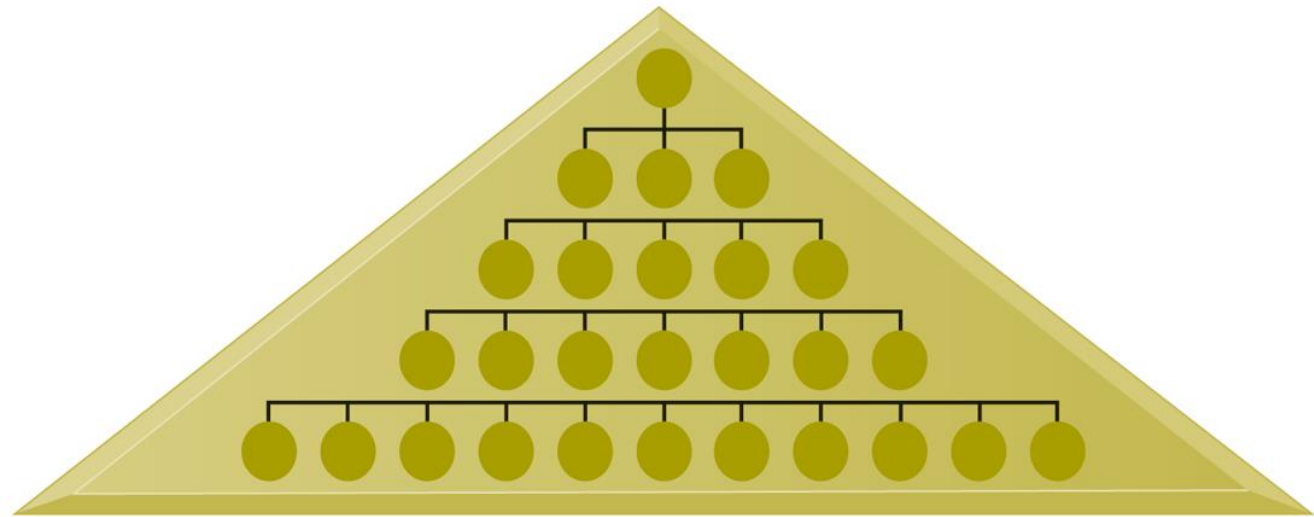
The Impact of Information Systems on Organizations

- 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.

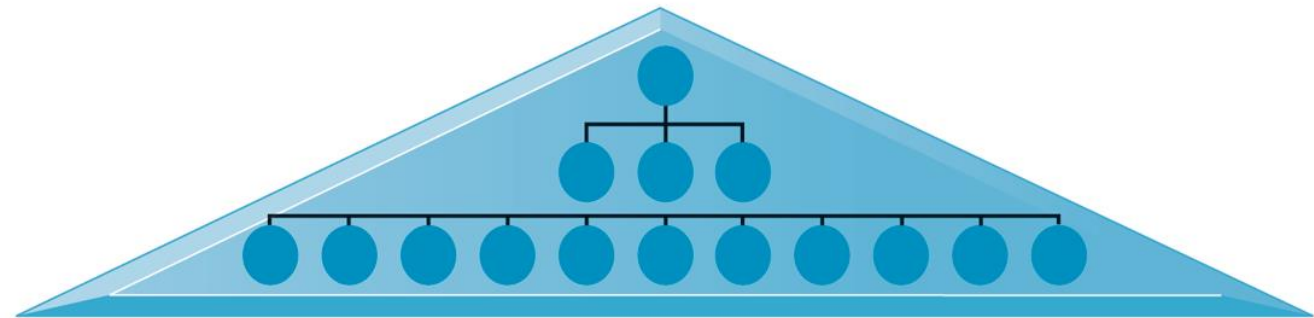
Flattening Organizations

FIGURE 3-6

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.



A traditional hierarchical organization with many levels of management



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

The Impact of Information Systems on Organizations

- 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.



The Impact of Information Systems on Organizations

- 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**. (E.g., Large firm delivers internal manuals to employees via a corporate Web site, saving millions of dollars in distribution costs)
- Organizational factors in planning a new system:
 - Environment, Culture and politics
 - Structure (Hierarchy, specialization, routines, business processes)
 - 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

Using Information Systems to Develop Competitive Strategies

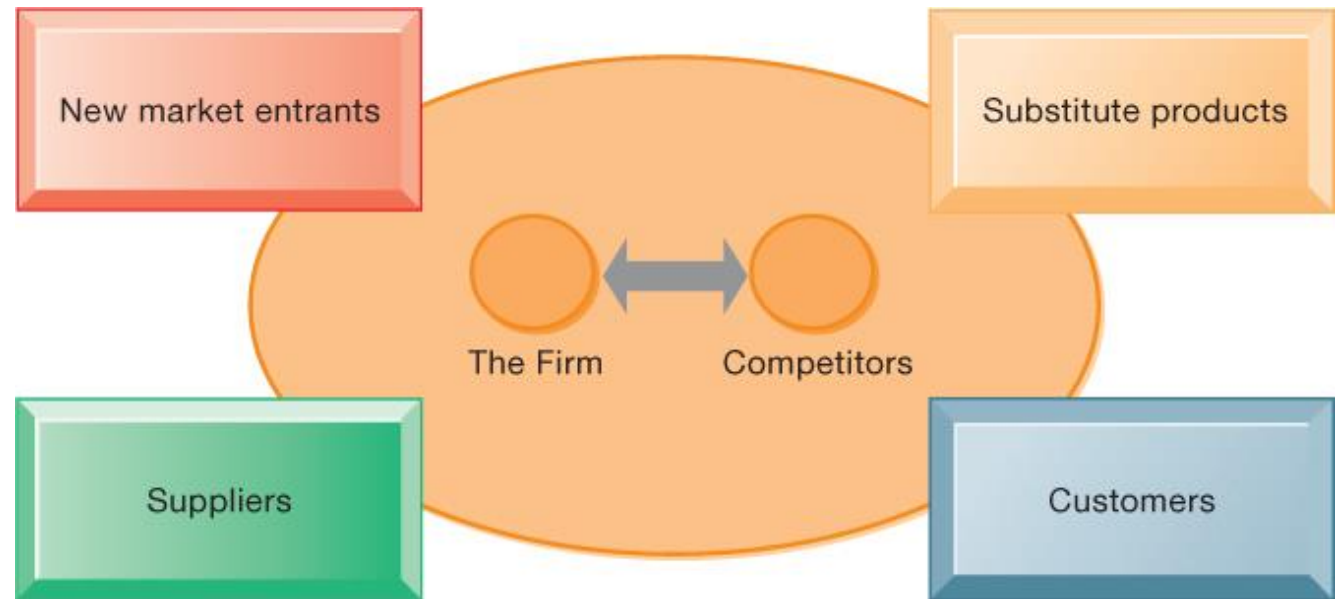
- Why do some firms become **leaders** in their industry? (E.g., Toyota, Amazon, Walmart, Apple's iTunes, Google)
 - Firms that “**do better**” (E.g., revenue growth, profitability, or productivity growth) → have a “**competitive advantage**”
- **Michael Porter's** competitive forces model
 - Provides 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

Porter's Competitive Forces Model

- **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 advantages, for example new **equipment**, **younger** workers, but little brand recognition.
- **Substitute products and services**
 - Substitutes customers might use if your prices become too high, for example, iTunes substitutes for CDs (New technologies)
- **Customers**
 - Can customers easily switch to competitor's products? Can they force businesses to compete on price alone in transparent marketplace? (**switch cost**)
- **Suppliers**
 - Market power of suppliers when firm cannot raise prices as fast as suppliers

Figure 3.8: 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.



Using Information Systems to Develop Competitive Strategies

- 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

Using Information Systems to Develop Competitive Strategies

- Low-cost leadership
 - Use information systems to produce products and services at a **lower operational costs** and the **lower prices** than competitors
 - Example: Walmart's efficient customer response system
 - Inventory replenishment system sends orders to suppliers when purchase recorded at cash register.
 - Minimizes inventory at warehouses, **operating costs**.
 - Efficient customer response system.
- Product differentiation
 - Use information systems to enable **new products or services**, greatly change customer convenience and experience in using your existing products and services.
 - Use information systems to **customize, personalize** products to fit specifications of individual consumers
 - Example: Google's continuous innovations, Apple's iPhone, Nike's iD program for customized sneakers

Using Information Systems to Develop Competitive Strategies

- Focus on market niche
 - Use information systems to enable a focused strategy on a **single market niche** and serve narrow target market better than competitors; specialize
 - Analyzes customer buying **habits, preferences**
 - Advertising pitches to smaller and smaller target markets
 - Example: Hilton Hotels' OnQ system
 - Analyzes data collected on guests to determine preferences and guest's profitability
- Strengthen customer and supplier intimacy
 - Use information systems to develop **strong ties** and **loyalty** with customers and suppliers, Increase **switching costs**
 - Example: Netflix, Amazon, Toyota
 - **Amazon:** keeps track of user preferences for purchases, and **recommends** titles purchased by others
 - **Toyota:** uses IS to facilitate direct access from suppliers to production schedules and permits suppliers to decide how and when to ship supplies to plants, allowing more lead time in producing goods.

Using Information Systems to Develop Competitive Strategies

- 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
 - 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

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

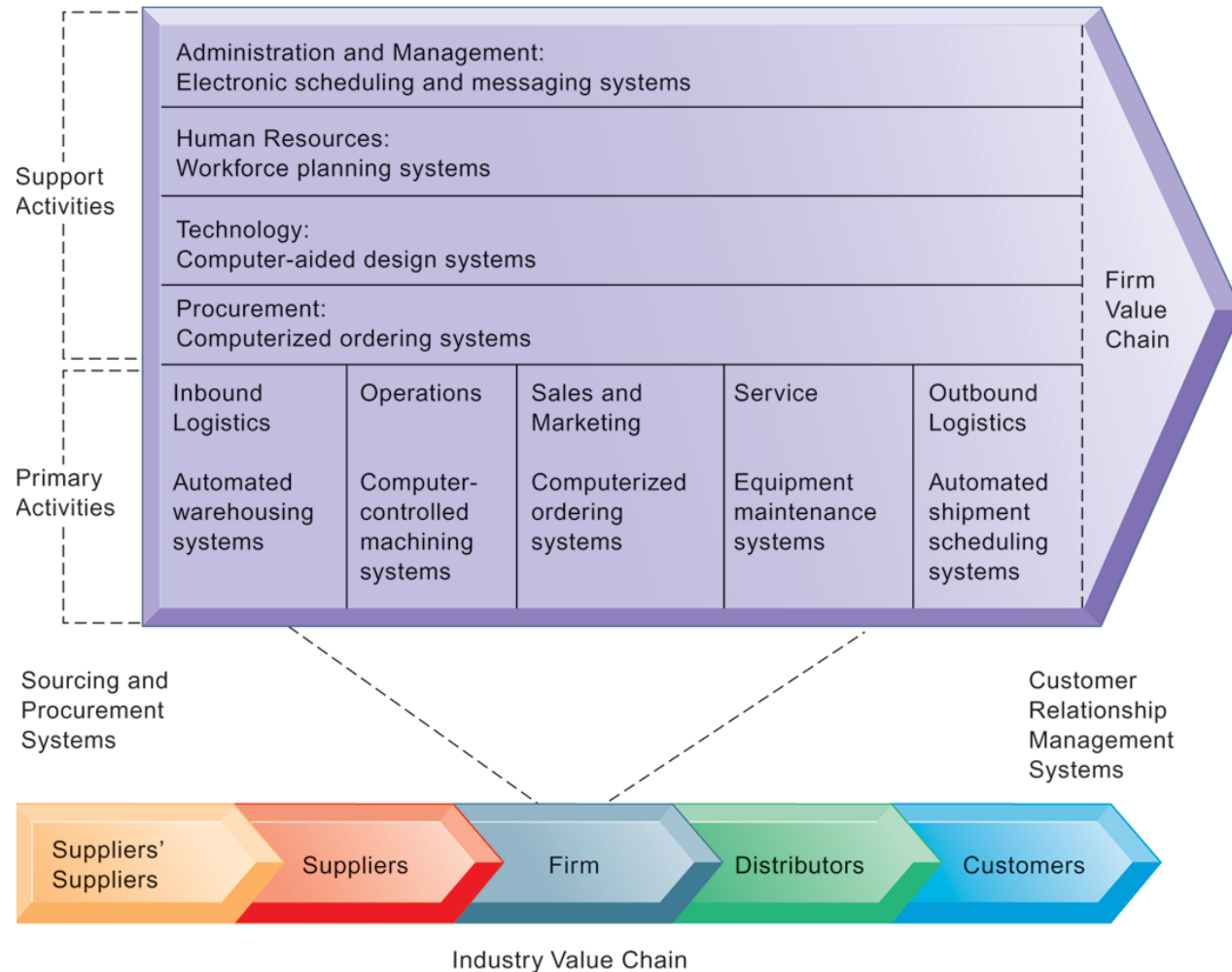
The Business Value Chain Model

- Firm as series of activities that **add value** to products or services
- The **value chain model** highlights specific activities where competitive strategies can best be applied (Porter, 1985)
 - 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

The Value Chain Model

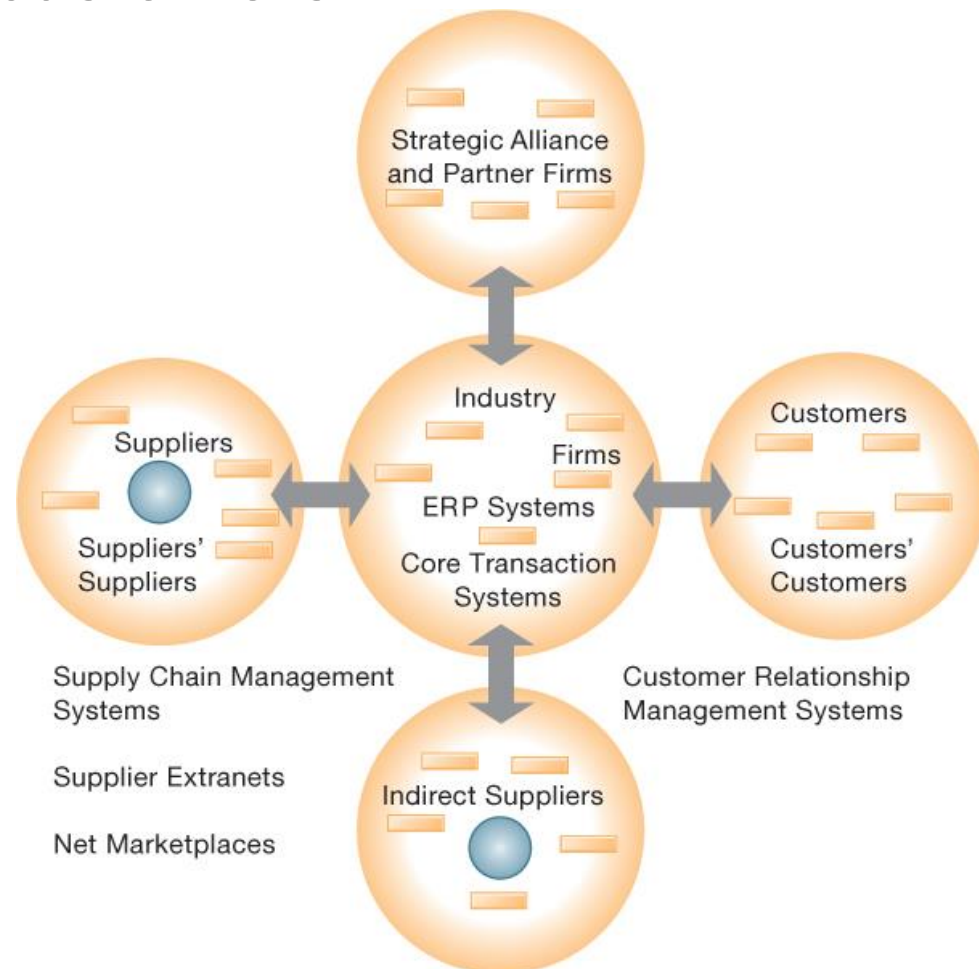
FIGURE 3-9

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.



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 to respond **rapidly** to changes in supply and **demand**.
 - More customer driven, less linear operation than traditional value chain



Using Information Systems to Develop Competitive Strategies

- 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
 - When two firms can pool markets and expertise (e.g., merger of Bank of NY and JPMorgan Chase, Purchase of YouTube by Google)
 - **Lower costs** and generate **profits**

Using Information Systems to Develop Competitive Strategies

- Core competencies
 - Activity for which firm is **world-class** leader (e.g., world's best miniature parts designer, best package delivery service)
 - Relies on **knowledge**, **experience**, and **sharing** this across business units (e.g., directory of subject matter experts)
- Network-based strategies
 - Take advantage of firm's abilities to **network** with one another (E.g., Telephone, E-mail, Social networks)
 - 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)
 - Include use of: (Network economics, Virtual company model and Business ecosystems)

Using Information Systems to Develop Competitive Strategies

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

An Ecosystem Strategic Model

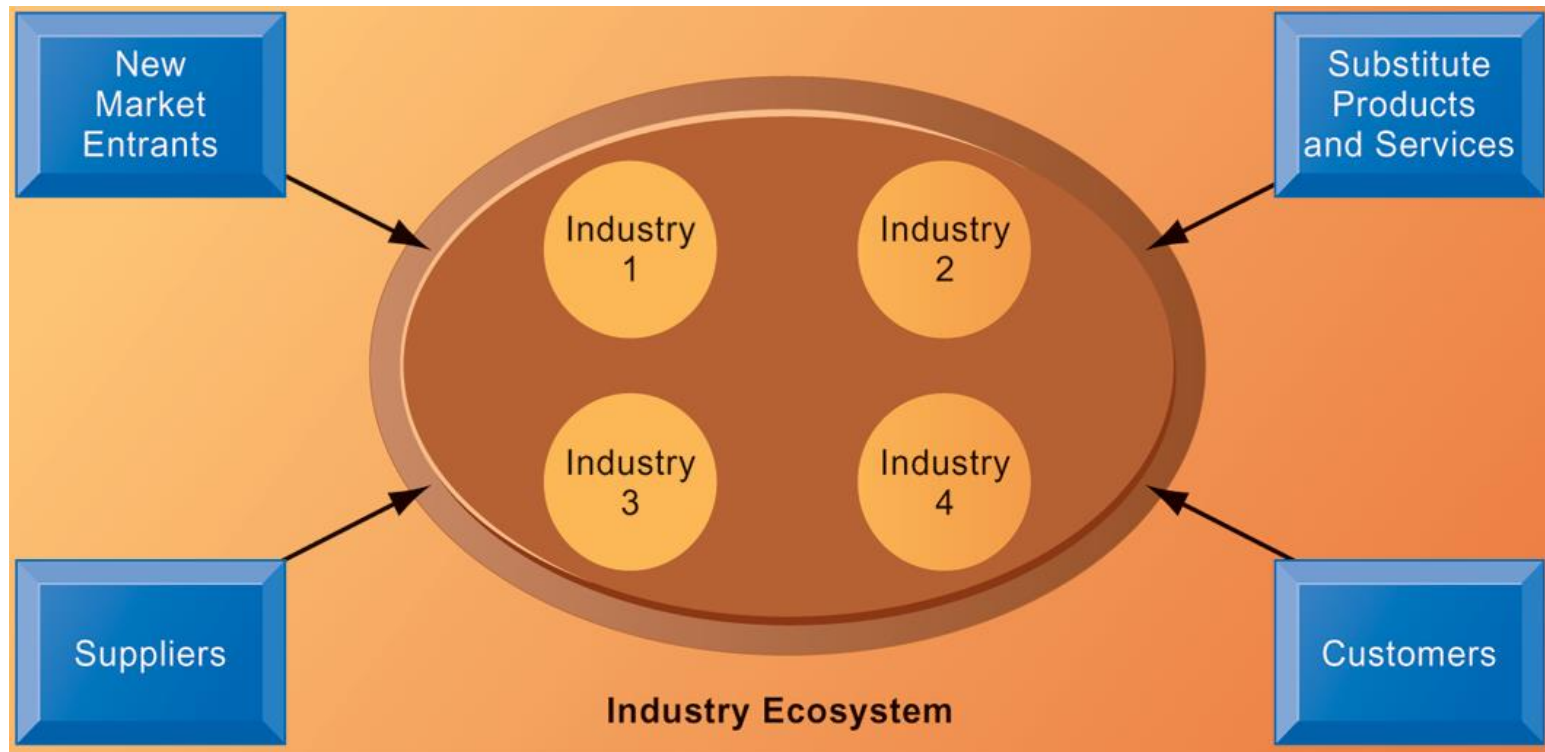


FIGURE 3-11. The digital firm era requires a more dynamic view of the boundaries among industries, firms, customers, and suppliers, with competition occurring among industry sets in a business ecosystem. In the ecosystem model, multiple industries work together to deliver value to the customer. IT plays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

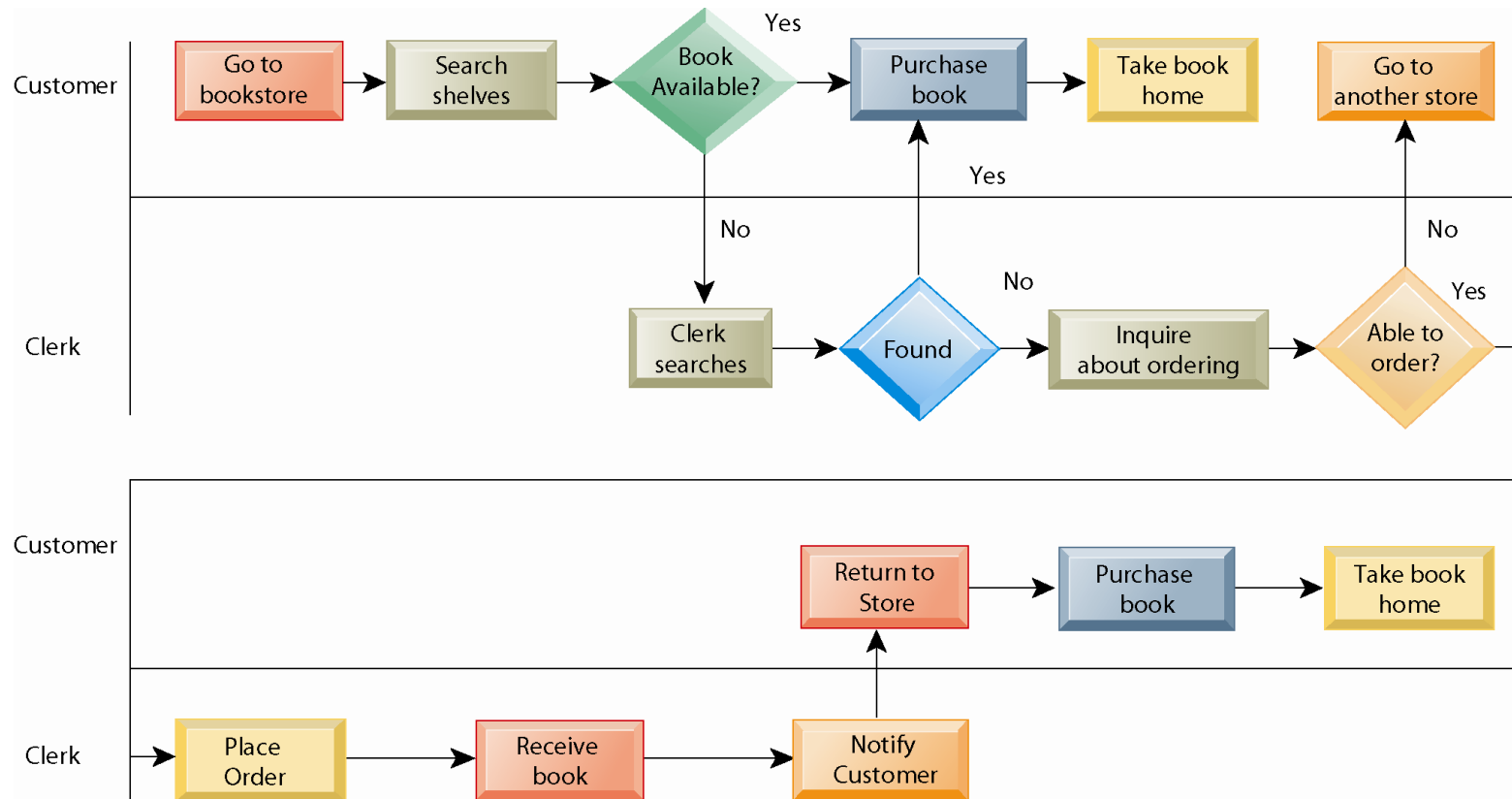
How Firms Compete on Business Processes: BPM

- 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

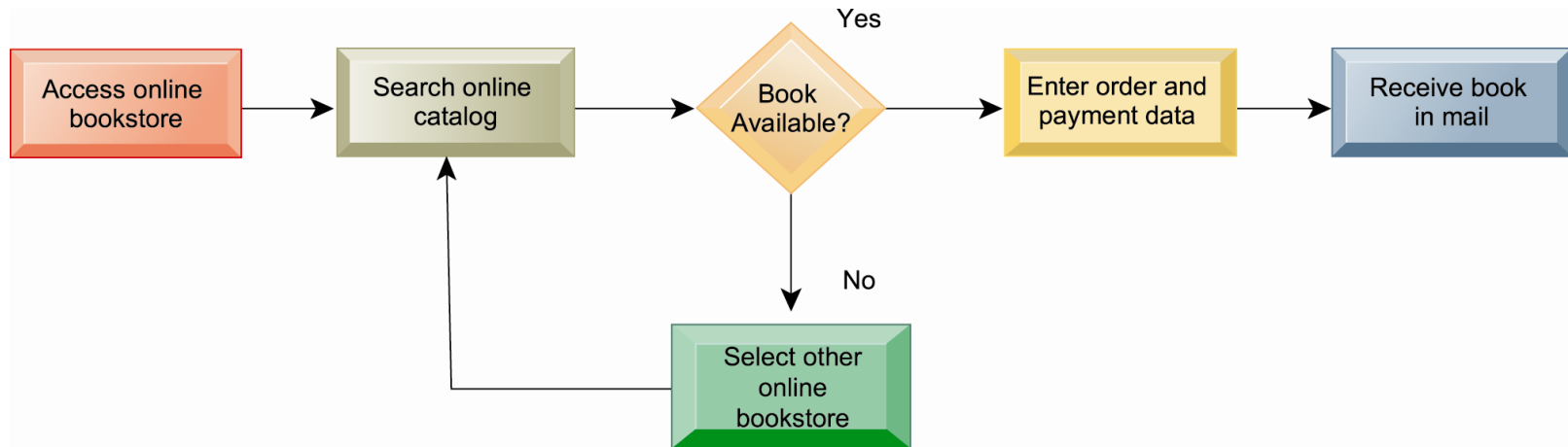
How Firms Compete on Business Processes: BPM

- **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



How Firms Compete on Business Processes: BPM



- **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

References

- **Chapter 3** - Kenneth C. Laudon and Jane P. Laudon. **Management Information Systems: Managing the Digital Firm**. 15th Edition. Pearson, 2018.
- **Chapter 3** - Kenneth C. Laudon and Jane P. Laudon. **Essentials of Management Information Systems**. 10th Edition, Pearson, 2013.