Competitive Advantage with Information Systems

Reading:

Laudon & Laudon

chapter 3

Additional Reading:

Brien & Marakas

chapter 2

Outline

- Competitive Advantage with Information Systems
  - Porter's Competitive Forces Model
  - Strategies for Dealing with Competitive Forces
  - Strategic Use of Information Technology
  - The Value Chain and Strategic IS
- Competing on Global Scale
- Competing on Quality and Design
  - What is Quality
  - How IS improve Quality
- Competing on Business Process

Apple's iTunes: Music's New Gatekeeper

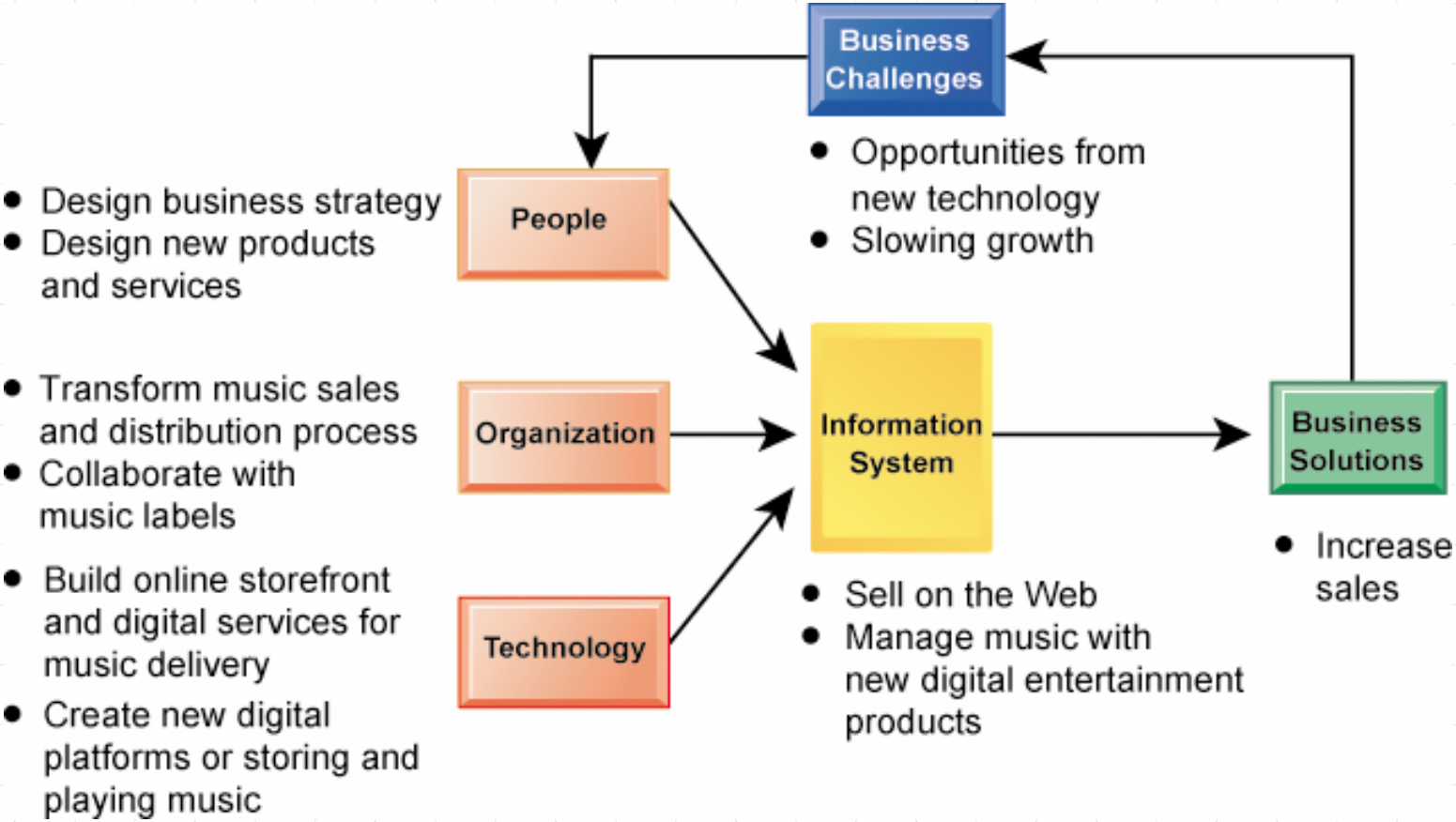
➢ Problem

Taking advantage of opportunities from new and disruptive technology, staying ahead of traditional competitors

➢ Solution

- Launches iPod and set up iTunes Music Store
  - *Create a marketplace for portable, downloadable music*
- Partnerships with artists and recording labels
  - *allow iTunes to supply exclusive content in return for driving sales and increasing groups' popularity*
- Illustrates digital technology's role in gaining and maintaining a competitive advantage

Apple's iTunes: Music's New Gatekeeper



Strategic Information Systems

Information Technology

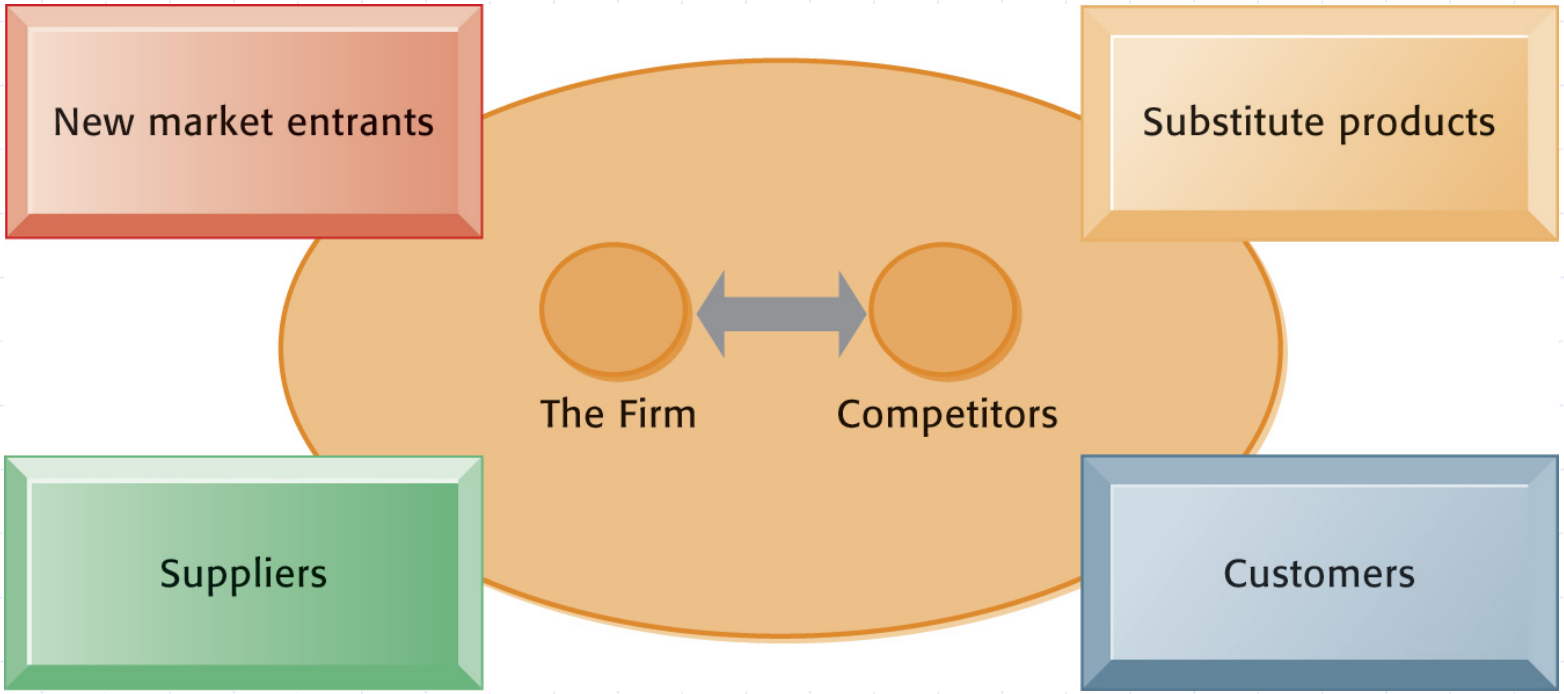
- No longer an afterthought in forming business strategy, but the actual cause and driver
- Can change the way business compete

Strategic Information System

- Any kind of information system
- That uses IT to help an organization
  - Gain a competitive advantage
  - Reduce a competitive disadvantage
  - Or meet other strategic enterprise objectives

Porter's Competitive Forces Model

- Five Competitive Forces Shape of Firm



Porter's Competitive Forces Model

- Five Competitive Forces Shape of Firm
  - **Traditional competitors**
    - Competitors in market space continuously devise new products, new efficiencies, switching costs on customers
  - **New market entrants**
    - Some industries have low barriers to entry
      - Example → food industry Vs microchip industry
    - Newer companies may have advantages
      - Newer equipment, younger workforce → less expensive, more innovative, etc.

Porter's Competitive Forces Model

- **Substitute products and services**
  - Substitutes customers can purchase if your prices too high
  - Example → Internet music service Vs CDs
- **Customers**
  - Ability to attract and retain customers
  - Can customers easily switch to competitor's products?
  - Can customers force firm and competitors to compete on price alone (transparent marketplace)
- **Suppliers**
  - The more suppliers a firm has, the greater control it can exercise over suppliers

Five Competitive Strategies

➢ Cost Leadership

- Become low-cost producers
- Help suppliers or customers reduce costs
- Increase cost to competitors
- Examples
  - Wal-Mart → Replenishes inventory with lightening speed, not need money to maintain inventory
  - eBay.com → Online auctions, Auction-set prices

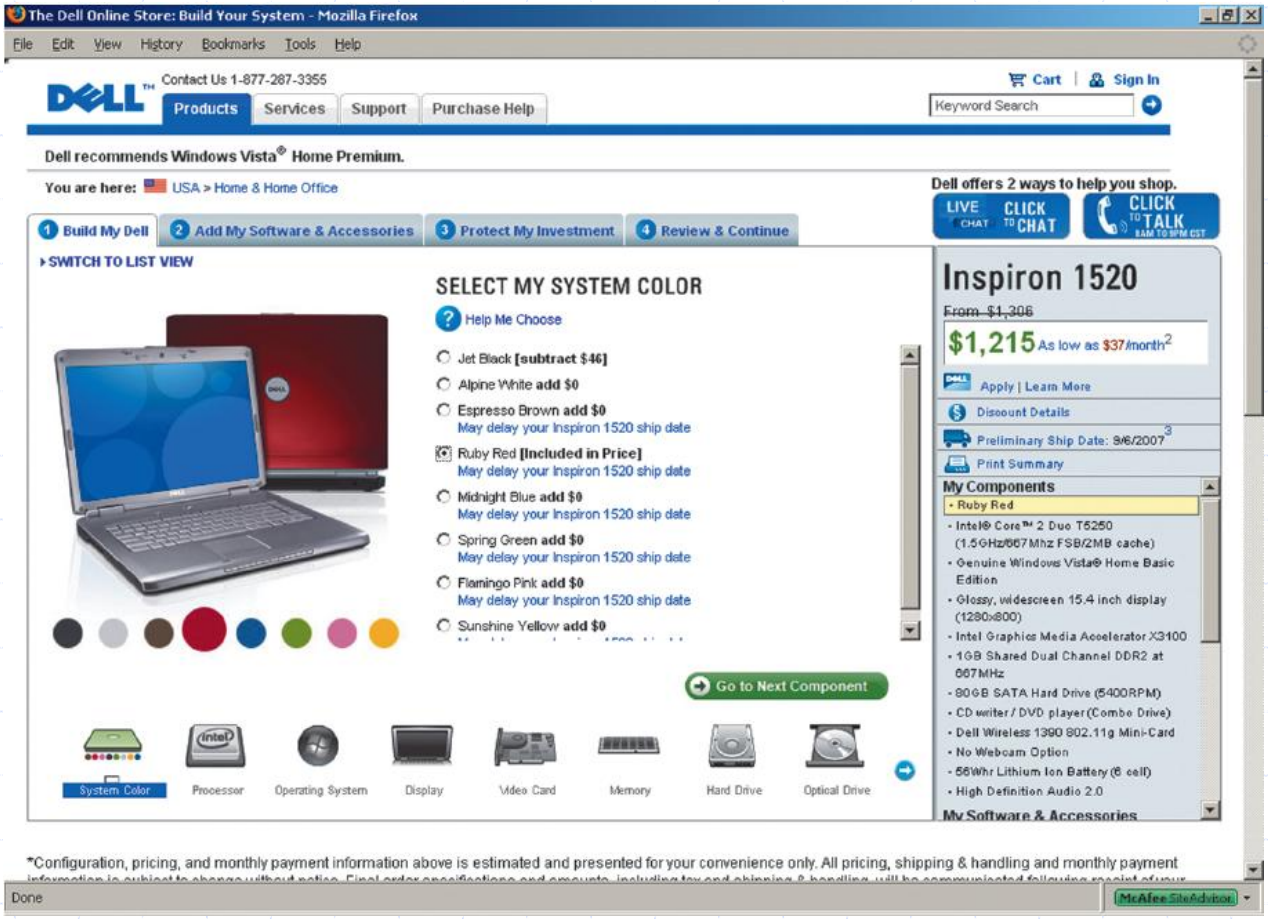
➢ Differentiation Strategy

- Develop ways to differentiate a firm's products from its competitors
- Can focus on particular segment or niche of market
- Examples
  - Dell Computer → Online customer design, Increase in market share
  - Moen Inc. → Online customer design, Increase in market share

Five Competitive Strategies

- Differentiation Strategy

On the Dell Inc. Web site, customers can select the options they want and order their computer custom built to these specifications. Dell's assemble-to-order system is a major source of competitive advantage.



Five Competitive Strategies

➢ Innovation Strategy

- Find new ways of doing business
  - Unique products or services
  - Or unique markets
  - Radical changes to business processes to alter the fundamental structure of an industry
- Example → Amazon uses online full-service customer systems

➢ Growth Strategy

- Expand company's capacity to produce goods and services
- Expand into global markets
- Diversify into new products or services
- Examples
  - Wal-Mart → uses merchandise ordering by global satellite tracking
  - Citicorp → uses global intranet, increase in global market

Five Competitive Strategies

➢ Alliance Strategy

- Establish linkages and alliances with
  - Customers, suppliers, competitors, consultants and other companies
- Includes mergers, acquisitions, joint ventures, virtual companies
- Examples
  - Procter & Gamble → automatic inventory, reduced inventory
  - Cisco Systems → Virtual manufacturing alliances, market leadership

Using These Strategies

- The strategies are not mutually exclusive
- Organizations use one, some or all

Five Competitive Strategies

- Using IT for These Strategies

Basic Strategies in the Business Use of Information Technology
Lower Costs • Use IT to substantially reduce the cost of business processes. • Use IT to lower the costs of customers or suppliers.
Differentiate • Develop new IT features to differentiate products and services. • Use IT features to reduce the differentiation advantages of competitors. • Use IT features to focus products and services at selected market niches.
Innovate • Create new products and services that include IT components. • Develop unique new markets or market niches with the help of IT. • Make radical changes to business processes with IT that dramatically cut costs, improve quality, efficiency, or customer service, or shorten time to market.
Promote Growth • Use IT to manage regional and global business expansion. • Use IT to diversify and integrate into other products and services.
Develop Alliances • Use IT to create virtual organizations of business partners. • Develop interenterprise information systems linked by the Internet and extranets that support strategic business relationships with customers, suppliers, subcontractors, and others.

Competitive Advantages

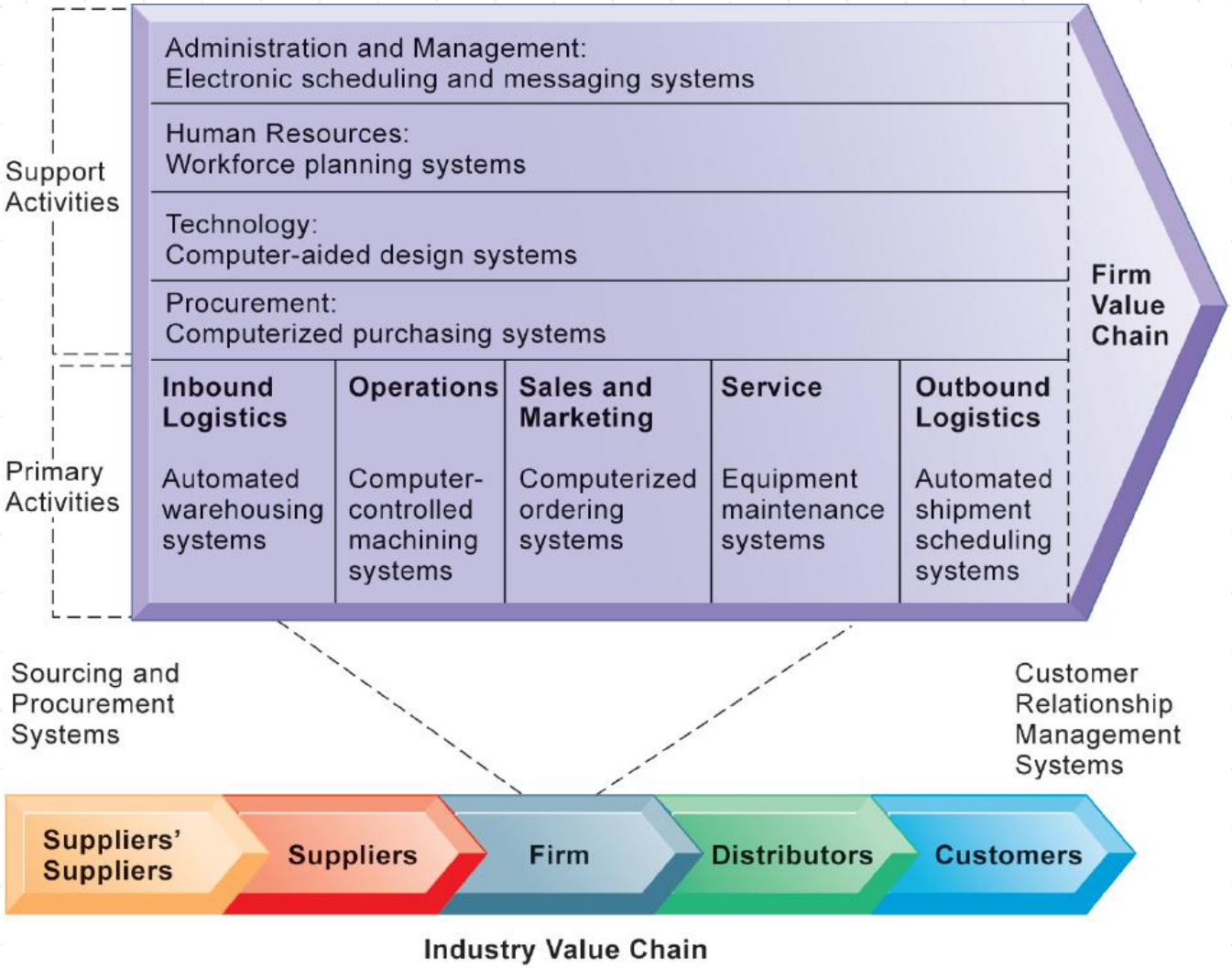
➢ Internet's Impact on Competitive Advantage

- Existing competitors
  - Widens market, increasing competitors, reducing differences, pressure to compete on price
- New entrants
  - Reduces barriers to entry (e.g. need for sales force declines), provides technology for driving business processes
- Substitute products and services
  - Facilitates creation of new products and services
- Customers' bargaining power
  - Bargaining power shifts to customer
- Suppliers' bargaining power
  - Procurement over Internet raises power over suppliers, suppliers can benefit from reduced barriers to entry and elimination of intermediaries

The Business Value Chain Model

- Porter Model
  - Not very specific
    - What exactly to do?
  - No exact methodology for competitive advantage
- Value Chain Model
  - Highlights specific activities in the business
    - Competitive strategies can be best applied
    - IT Systems are most likely to have impact
  - Primary Activities
  - Support activities
  - Benchmarking
    - Comparing efficiency of your b* process with strict standards
  - Best practices
    - Identified by Government or research organizations → most successful solution for achieving business objective

The Business Value Chain Model



Business Process Reengineering

- BPR
  - Fundamental rethinking and radical redesign of business processes to achieve improvements in *cost*, *quality*, *speed* and *service*
  - Tasks are streamlined to eliminate repetitive and redundant work
  - Potential payback high
  - Risk of failure is also high
  - Mortgage banks have been great beneficiaries of BPR, achieving remarkable leaps forward in efficiency

	Business Improvement	Business Process Reengineering
Level of Change	Incremental	Radical
Process Change	Improved new version of process	Brand-new process
Starting Point	Existing processes	Clean slate
Frequency of Change	One-time or continuous	Periodic one-time change
Time Required	Short	Long
Typical Scope	Narrow, within functions	Broad, cross functional
Horizon	Past and present	Future
Participation	Bottom-up	Top-down
Path to Execution	Cultural	Cultural, structural
Primary Enabler	Statistical control	Information technology
Risk	Moderate	High

Source: Adapted from Howard Smith and Peter Fingar, *Business Process Management: The Third Wave* (Tampa, FL: Meghan-Kiffer Press, 2003), p. 118.

Business Process Reengineering

Workflow Management

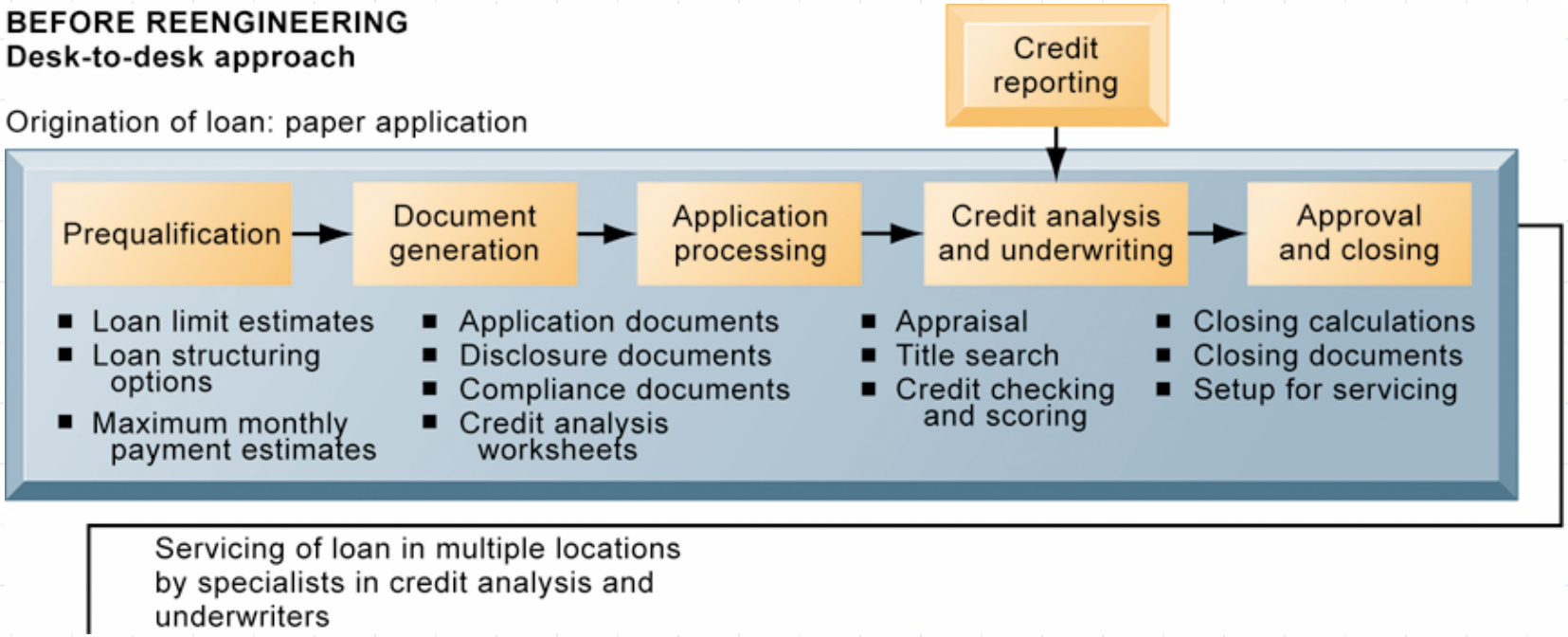
- Streamlines business procedures so documents can be moved easily and efficiently
- Automates processes
- Eliminates delays
- Allows simultaneous work

Steps in Effective Reengineering

- Understanding what business processes need improvement
- Understanding how the improvements will help the firm execute its strategy
- Understanding and measuring the performance of existing processes as baselines
- Managing change

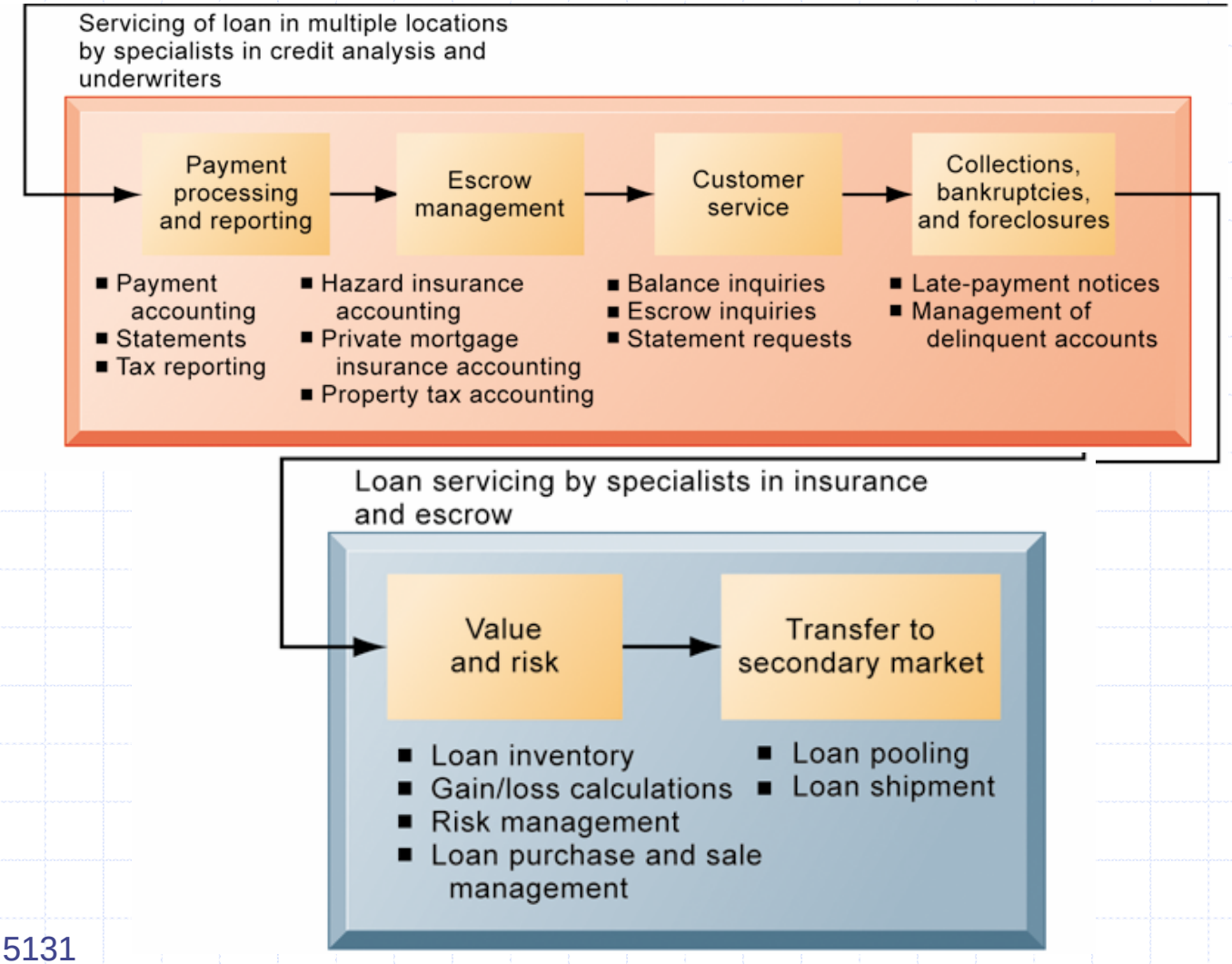
Business Process Reengineering

- Redesigning Mortgage Processing (USA)



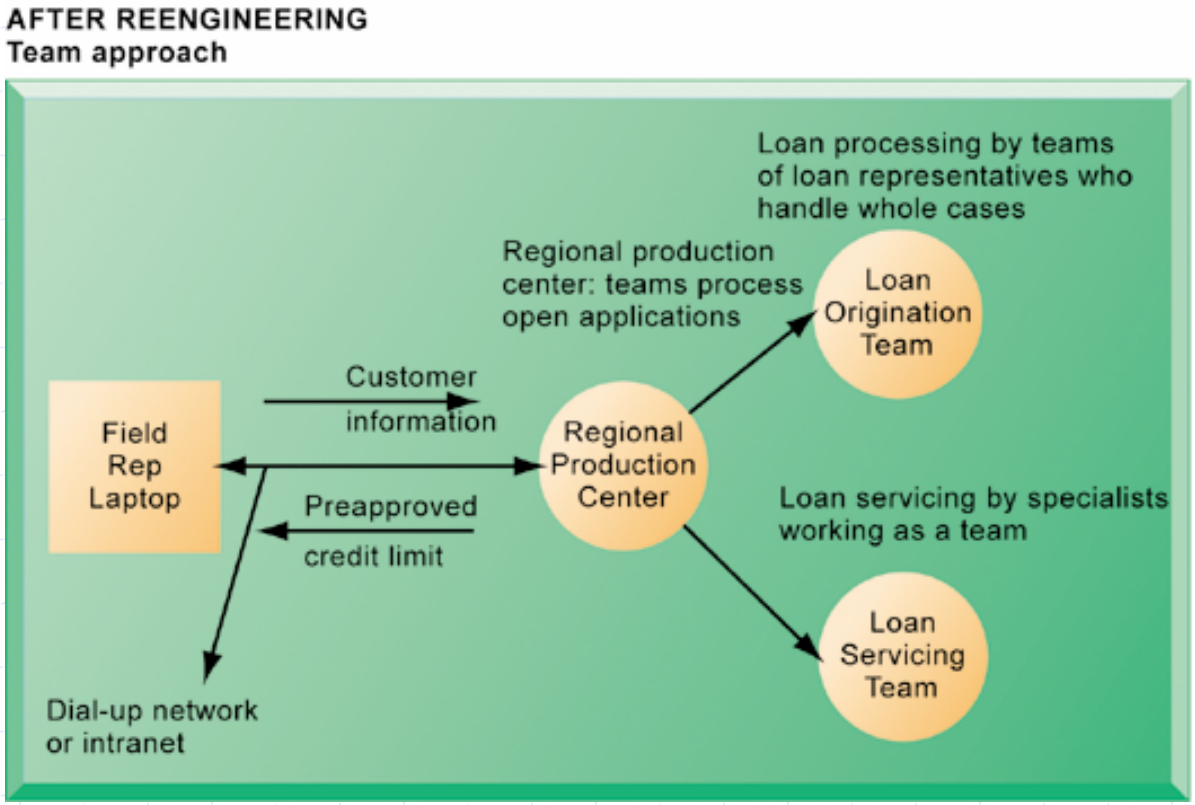
Business Process Reengineering

- Redesigning Mortgage Processing (USA)



Business Process Reengineering

➢ Redesigning Mortgage Processing (USA)



By redesigning their mortgage processing systems and the mortgage application process, mortgage banks are able to reduce the costs of processing the average mortgage from $3,000 to $1,000 and reduce the time of approval from six weeks to one week or less. Some banks are even preapproving mortgages and locking interest rates on the same day the customer applies.

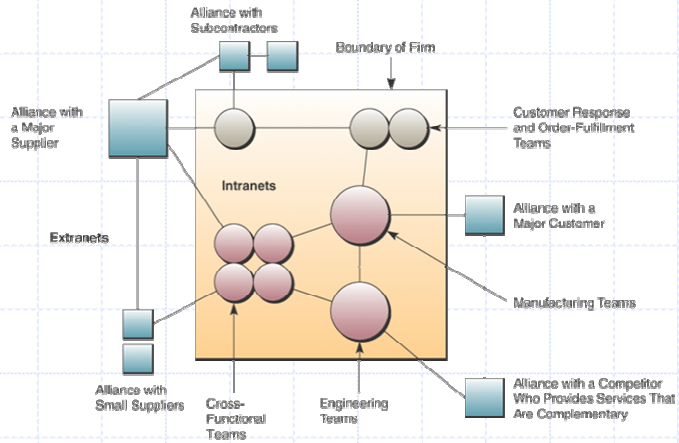
Virtual Company

- Virtual Company
- Usage of IT to Link
  - People
  - Organizations
  - Assets
  - And ideas
- Why Virtual Company?
  - To Implement key business strategies and alliances for success in *turbulent business climate*
- Creates inter enterprise information system
  - to link customers, suppliers, subcontractors and competitors

Strategies of Virtual Companies
• Share infrastructure and risk with alliance partners.
• Link complementary core competencies.
• Reduce concept-to-cash time through sharing.
• Increase facilities and market coverage.
• Gain access to new markets and share market or customer loyalty.
• Migrate from selling products to selling solutions.

Virtual Company

- Uses Internet, Intranets, and Extranets to form virtual workgroup and support alliances with business partners



- Example → Li & Fung (HK)
  - Manages Production and Shipment of Garment
  - Customers → Fashion Companies (GUESS, Ann Taylor, Reebok, etc.)
  - *Product Development, Raw Material Sourcing, Production, Planning, Quality Assurance, Shipping*
  - Does not own any fabric, factories, or machines
  - Outsourcing → Network of more than 7500 supplies in 37 countries
  - Customers → Private Extranet, Li & Fung → Raw Material Supplies and Factories, Extranet tracks entire production process
  - Flexible and adaptable, Produces in short order, changing fashion trends

Disruptive Technologies

- Disruptive Technologies
  - Technologies with disruptive impact on industries and businesses, rendering existing products, services and business models obsolete
- Examples

Technology	Description	Winners and Losers
Transistor (1947)	Low power, compact, semiconductor switch that destroyed the vacuum tube industry	Transistor manufacturing firms win (Texas Instruments), while vacuum tube manufacturers decline (RCA, Sylvania)
Microprocessor chips (1971)	Thousands and eventually millions of transistors on a silicon chip	Microprocessor firms win (Intel, Texas Instruments), while transistor firms (GE) decline
Personal computers (1975)	Small, inexpensive, but fully functional desktop computers	PC manufacturers (HP, Apple, IBM) and chip manufacturers (Intel) prosper, while mainframe (IBM) and minicomputer (DEC) firms lose
PC word processing software (1979)	Inexpensive, limited but functional text editing and formatting for personal computers	PC and software manufacturers (Microsoft, HP, Apple) prosper, while the typewriter industry disappears
World Wide Web (1989)	A global database of digital files and "pages" instantly available	Owners of online content and news benefit, while traditional publishers (newspapers, magazines, and broadcast television) lose

Disruptive Technologies

➢ First Movers Vs Fast Followers

- First movers of disruptive technologies may fail to see potential, allowing second movers to reap rewards (fast followers)

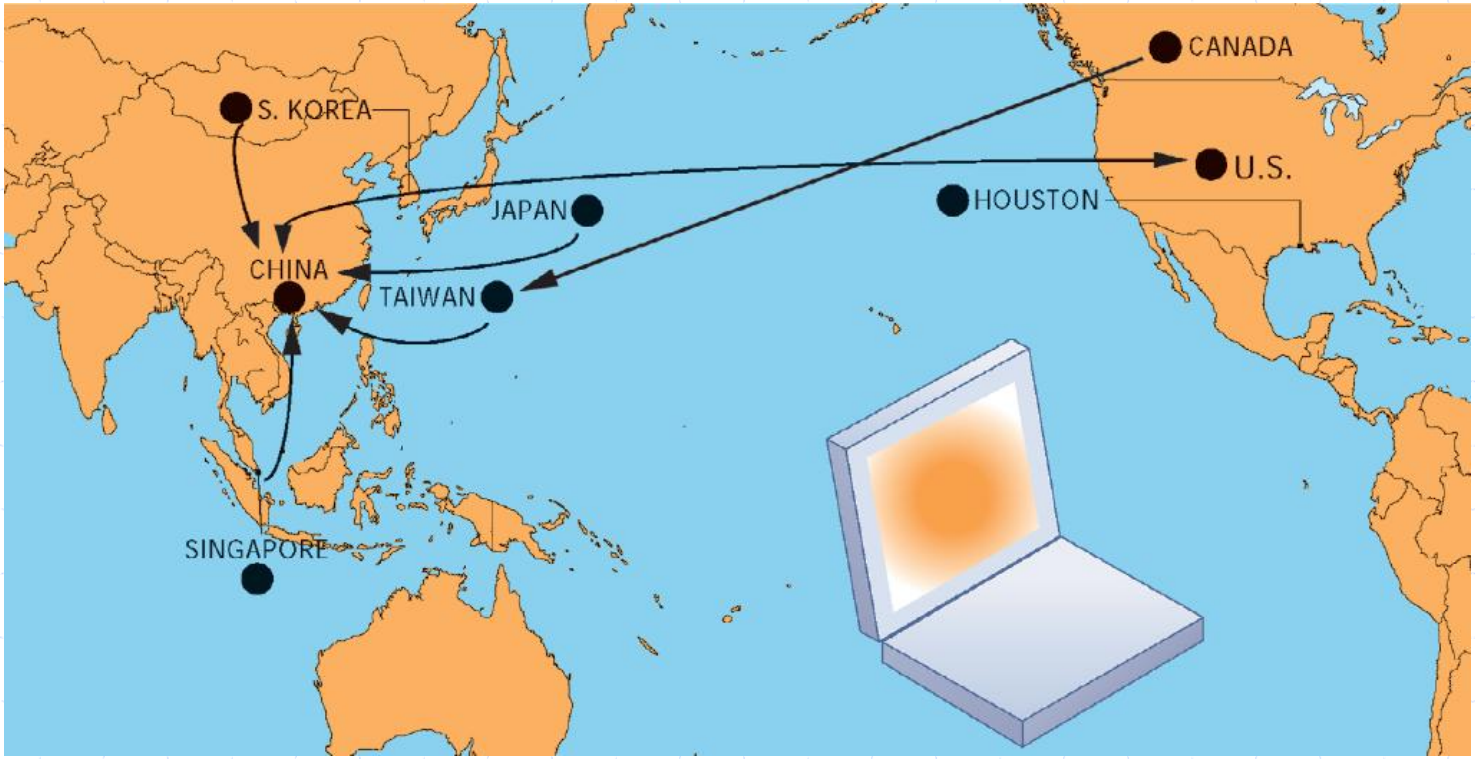
Internet music (1998) services	Repositories of downloadable music on the Web with acceptable fidelity	Owners of online music collections (MP3.com, iTunes), telecommunications providers who own Internet backbone (ATT, Verizon), and local Internet service providers win, while record label firms and music retailers lose (Tower Records)
PageRank algorithm	A method for ranking Web pages in terms of their popularity to supplement Web search by key terms	Google wins (it owns the patent), while traditional key word search engines (Alta Vista) lose
Online video search algorithms	Using a family of techniques from speech recognition to text classification in order to make large video collections easily searchable	Online video search companies (Blinkx) win, while traditional search engines at Yahoo!, Amazon, and even Google are challenged
Software as Web service	Using the Internet to provide remote access to online software	Online software services companies (Salesforce.com) win, while traditional "boxed" software companies (Microsoft, SAP, Oracle) lose
Online print services	Using the Internet to provide remote access to digital printers and online designers	Online print process firms gain (digitalpressonline.com), while traditional printers lose (RR Donnelly)

Competing on Global Scale

- Before Internet (Until Mid-90's)
  - Only affordable by huge firms → GE, GM, IBM, etc.
- 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
- Examples
  - Jeans or Sneakers with USA label? Most likely designed in California, Stitched together in HK or Guatemala using material from China or India
  - Calling for Microsoft or Verizon Help? Most likely you will be speaking to customer service representatives in India

Competing on Global Scale

- An HP Laptop's Path to Market



- Idea, Laptop Design Team – USA, Approval – Houston
- Graphics Processors designed in Canada, Made in Taiwan
- Taiwan, South Korea – LCD Screens, Memory Chips,
- Japan, Singapore, USA – Other Components
- China – Assembly

International Business Organization

- 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
- Transnational
  - Regional (not national) headquarters and perhaps world headquarters; optimizing resources as needed

Competing on Quality

- What is Quality?
- Producer's Perspective
  - Conformance to specifications and absence of variation from specs
- Customer's Perspective
  - Physical quality (reliability), quality of service, psychological quality
- Total Quality Management (TCM)
  - Developed in US (Deming, Juran), Popularized in Japan
  - Quality → Responsibility of all people and functions within organization
  - Relies on an information system → Supplies workers and management with the data necessary to improve products and drive down costs
- Six Sigma
  - Spot problems and correct them before they are too deeply embedded in the company's processes
  - Longer a flaw is allowed to fester in the system → More problems
  - Identify defects early and eliminate → Efficient production at lower cost
  - Specific Measure of quality: 3.4 defects/million opportunities
  - Most Companies cannot achieve this level, Use as Goal to Implement/Improve

Competing on Quality

➢ How Information Systems Improve Quality?

- Reduce cycle time (provide info) and simplify production process
- Benchmarking → Identify Benchmark targets
- 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