2 Competing with Information Technology

I. CHAPTER OVERVIEW

This chapter introduces the fundamental concepts of competitive advantage through information technology, and illustrates strategic applications of information systems that can gain competitive advantages for today’s global e-business enterprises.

Section I: Fundamentals of Strategic Advantage
Section II: Using Information Technology for Strategic Advantage

II. LEARNING OBJECTIVES

Learning Objectives
1. Identify several basic competitive strategies and explain how they can use information technologies to confront the competitive forces faced by a business.
2. Identify several strategic uses of Internet technologies and give examples of how they give competitive advantages to a business.
3. Give examples of how business process reengineering frequently involves the strategic use of Internet technologies.
4. Identify the business value of using Internet technologies to become an agile competitor or to form a virtual company.
5. Explain how knowledge management systems can help a business gain strategic advantages.
III. TEACHING SUGGESTIONS

Section 1 concentrates on the strategic role of information systems. Figure 2.2 can be used to illustrate the competitive environment of an industry. According to Porter’s model, there are five competitive forces that determine the profitability and survival of the firms within an industry. This figure outlines a matrix that businesses can use to develop competitive strategies to confront each of the competitive forces they confront in the market. Figure 2.3 gives a summary of how information technology can be used to implement the five basic competitive strategies. Figure 2.5 outlines a number of additional ways that information technology can be used to implement competitive strategies. Figure 2.6 illustrates the interrelationships in a customer-focused business. Intranets, extranets, e-commerce websites, and web-enabled internal business processes form the invisible IT platform that supports this e-business model. Figure 2.7 explains Porter’s concept of the value chain of a firm. This figure illustrates how Strategic Information Systems (SIS) can be applied to a firm’s basic activities for competitive advantage.

Section 2 dives into the strategic uses of information technology. Figure 2.9 points out that while the potential payback of reengineering are high, so is its risk of failure and level of disruption to the organizational environment. Figure 2.12 discusses how information technology can help a company be an agile competitor with the help of customer and business partners. Internet technologies can make customers the focal point of a business. This should generate a fair amount of discussion with your students, and a good open discussion can be developed by demonstrating ways in which major companies are making extensive use of Internet, Intranets, and extranet websites to compete more effectively. Figure 2.13 and Figure 2.14 deal with creating a virtual company. Figure 2.13 illustrates how virtual companies use the Internet, intranets, and extranets to form virtual workgroups and support alliances with business partners. Figure 2.14 expresses the basic business strategies of virtual companies.
IV. LECTURE NOTES

Section I: Fundamentals of Strategic Advantage

Strategic IT

Information systems must be viewed as more than a set of technologies that support efficient business operations, workgroup and enterprise collaboration, or effective business decision making. Information technology can change the way businesses compete. For this reason, you should view information systems strategically - that is, as vital competitive networks, as a means of organizational renewal, and as a necessary investment in technologies that help a company adopt strategies and business processes that enable it to reengineer or reinvent itself in order to survive and succeed in today’s dynamic business environment.

Analyzing GE, Dell, Intel, and Others

We can learn a lot about the strategic business uses of information technologies for competitive advantage from this case. Take a few minutes to read it, and we will discuss it (See GE, Dell, Intel, and Others: The Competitive Advantage of Information Technology in Section IX).

Competitive Strategy Concepts

The strategic role of information systems involves using information technology to develop products, services, and capabilities that give a company major advantages over the competitive forces it faces in the global marketplace. This creates strategic information systems, information systems that support or shape the competitive position and strategies of a business enterprise. So a strategic information system can be any kind of information system (TPS, MIS, DSS, etc.) that helps an organization:

• Gain a competitive advantage
• Reduce a competitive disadvantage
• Meet other strategic enterprise objectives

Competitive Forces and Strategies

According to Michael Porter, any business that wants to survive and succeed must develop strategies to confront five competitive forces that shape the structure of competition in its industry.

These include [Figure 2.2]:

• Rivalry of competitors within its industry
• Threat of new entrants
• Threat of substitutes
• Bargaining power of customers
• Bargaining power of suppliers

A variety of competitive strategies can be developed to help a firm confront these competitive forces. These include [Figure 2.2]:

• Cost Leadership Strategy
  - Become a low-cost producer of products and services
  - Find ways to help suppliers or customers reduce their costs
  - Increase the costs of competitors.

• Differentiation Strategy
- Develop ways to differentiate products and services from competitors
- Reduce the differentiation advantages of competitors

- **Innovation Strategy**
  - Find new ways of doing business:
    a) Develop unique products and services
    b) Enter into unique markets or marketing niches
    c) Establish new business alliances
    d) Find new ways of producing products/services
    e) Find new ways of distributing products/services

- **Growth Strategies**
  - Significantly expand the company’s capacity to produce goods and services
  - Expand into global markets
  - Diversify into new products and services
  - Integrate into related products and services

- **Alliance Strategies**
  - Establish new business linkages and alliances with customers, suppliers, competitors, consultants and other companies (mergers, acquisitions, joint ventures, forming “virtual companies”, etc.).

**Strategic Uses of Information Technology: [Figure 2.3]**

How can the preceding competitive strategy concepts be applied to the strategic role of information systems? Information technology can be used to implement a variety of competitive strategies. These include the five basic competitive strategies (differentiation, cost, innovation, growth, and alliance), as well as other ways that companies can use information systems strategically to gain a competitive edge. For example:

- Lower Costs
- Differentiate
- Innovate
- Promote Growth
- Develop Alliances

**Other Competitive Strategies  [Figures 2.2 & Figure 2.5]**

Several key strategies that are also implemented with information technology include:

- **Locking in Customers or Suppliers**
  - Building valuable new relationships with them. This can deter both customers and suppliers from abandoning a firm for its competitors or intimidating a firm into accepting less-profitable relationships.

- **Building switching costs**
  - Make customers or suppliers dependent on the continued use of innovative, mutually beneficial interenterprise information systems.
  - Customers or suppliers become reluctant to pay the costs in time, money, effort, and inconvenience that it would take to change to a company’s competitors.

- **Raising barriers to entry**
  - Increasing the amount of investment or the complexity of the technology required to compete in an industry or a market segment can discourage or delay other companies from entering a market.

- **Leveraging investment in information technology**
- By investing in advanced computer-based information systems to improve their own efficiency, firms are able to developing new products and services that would not be possible without a strong IT capability.
- Corporate Intranets and extranets enable firms to leverage their previous investments in Internet browsers, PCs, servers, and client/server networks.

**Building a Customer-Focused Business: [Figure 2.6]**

For many companies, the chief business value of becoming a *customer-focused business* lies in its ability to help them:

- Keep customers loyal
- Anticipate customers future needs
- Respond to customer concerns
- Provide top quality customer service

The concept of customer-focused e-business focuses on *customer value*. This strategy recognizes that quality, rather than price, has become the primary determinant in a customer’s perception of value. From a customer’s point of view, companies that consistently offer the best value are able to:

- Keep track of their customers’ individual preferences
- Keep up with market trends
- Supply products, services and information anytime and anywhere
- Provide customer services tailored to individual needs.

Increasingly, businesses are serving many of their customers and prospective customers via the Internet. This large and fast-growing group of customers wants and expects companies to communicate with them and service their needs at e-commerce websites. The Internet has become a strategic opportunity for companies large and small to offer fast, responsive, high-quality products and services tailored to individual customer preferences.

**The Value Chain and Strategic IS: [Figure 2.7]**

An important concept that can help a manager identify opportunities for strategic information systems is the *value chain* concept as developed by Michael Porter. This concept:

- Views a firm as a series or "chain" of basic activities that add value to its products and services and thus, add a margin of value to the firm.
- Some business activities are viewed as primary activities, and others are support activities. This framework can highlight where competitive strategies can best be applied in a business.
- Managers and business professionals should try to develop a variety of strategic uses of Internet and other technologies for those activities that add the most value to a company’s product or service, and thus to the overall business value of the company.

**Value Chain Examples: [Figure 2.7]**

Collaborative workflow internet-based systems can increase the communications and collaboration needed to dramatically improve administrative co-ordination and support services. Examples of support processes:

- Career development *intranet* can help the human resources management function provide employees with professional development training programs.
- Computer-aided engineering and design *extranets* enable a company and its business partners to jointly
design products and processes.

- *Extranets* can dramatically improve procurement of resources by providing an online e-commerce website for a firm’s suppliers.

Examples of primary processes:
- Automated just-in-time warehousing systems to support inbound logistic processes involving storage of inventory, computer-aided flexible manufacturing (CAM) systems for manufacturing operations, and online point-of-sale and order processing systems to improve outbound logistics processes that process customer orders.
- Support of marketing and sales processes by developing an interactive target marketing capability on the Internet and its World Wide Web.
- Customer service can be dramatically improved by a co-ordinated and integrated customer relationship management system.
IV. LECTURE NOTES (con’t)

Section II: Using Information Technology for Strategic Advantage:

Strategic Uses of IT:

Companies may use information systems strategically, or may be content to use IT to support efficient everyday operation. But if a company emphasized strategic business uses of information technology, its management would view IT as a major competitive differentiator.

Analyzing The U.S. Department of Commerce

We can learn a lot about the strategic importance of knowledge management systems from this case. Take a few minutes to read it, and we will discuss it (See The U.S. Department of Commerce: Using IT to Tap Experts’ Know-How Through Knowledge Management in Section IX).

Reengineering Business Processes: [Figure 2.9]

One of the most popular competitive strategies today is **business process reengineering** - most often simply called reengineering. Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in cost, quality, speed, and service. BPR combines a strategy of promoting business innovation with a strategy of making major improvements to business processes so that a company can become a much stronger and more successful competitor in the marketplace. The potential payback of reengineering is high, but also is its level of risk and disruption to the organizational environment.

The Role of Information Technology

Information technology plays a major role in reengineering business processes. The speed, information processing capabilities and connectivity of computers and Internet technologies can substantially increase the efficiency of business processes, as well as communication and collaboration among the people responsible for their operation and management.

Becoming an Agile Competitor:

**Agility** in competitive performance is the ability of a business to prosper in rapidly changing, continually fragmenting global markets for high-quality, high-performance, customer-configured products and services. An agile company can:

- Make a profit in markets with broad product ranges and short model lifetimes.
- Process orders individually or in arbitrary lot sizes.
- Offer individualized products while maintaining high volumes of production.

Agile companies depend heavily on information technology to:

- Enrich its customers with customized solutions to their needs.
- Cooperate with other businesses to bring products to market as rapidly and cost-efficiently as possible.
- Combine the flexible, multiple organizational structures it uses.
- Leverage the competitive impact of its people and information resources.
Creating a Virtual Company: [Figure 2.13]

- A virtual company (also called a virtual corporation or virtual organization) is an organization that uses information technology to link people, assets, and ideas.
- Virtual companies also form interenterprise information systems with suppliers, customers, subcontractors, and competitors.

Virtual Company Strategies:

Several major reasons why people are forming virtual companies include:
- Share infrastructure and risk
- 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

Building the Knowledge-Creating Company

To many companies today, lasting competitive advantage can only be theirs if they become knowledge-creating companies or learning organizations. That means consistently creating new business knowledge, disseminating it widely throughout the company, and quickly building the new knowledge into their products and services.

Knowledge-creating companies exploit two kinds of technology:
- Explicit Knowledge - data, documents, things written down or stored on computers.
- Tacit Knowledge – “how-tos” of knowledge, which reside in workers.

Successful knowledge management creates techniques, technologies, and rewards for getting employees to share what they know and to make better use of accumulated workplace knowledge.

Knowledge Management Systems:

Knowledge management has become one of the major strategic uses of information technology. Many companies are building knowledge management systems (KMS) to manage organizational learning and business know-how. The goal of KMS is to help knowledge workers create, organize, and make available important business knowledge, wherever and whenever it’s needed in an organization. This includes processes, procedures, patterns, reference works, formulas, “best practices,” forecasts, and fixes. Internet and intranet websites, groupware, data mining, knowledge bases, discussion forums, and videoconferencing are some of the key information technologies for gathering, storing, and distributing this knowledge.

Characteristics of KMS:
- KMSs are information systems that facilitate organizational learning and knowledge creation.
- KMSs use a variety of information technologies to collect and edit information, assess its value, disseminate it within the organization, and apply it as knowledge to the processes of a business.
- KMSs are sometimes called adaptive learning systems. That’s because they create cycles of organizational learning called learning loops, where the creation, dissemination, and application of knowledge produces an adaptive learning process within a company.
- KMSs can provide rapid feedback to knowledge workers, encourage behavior changes by employees, and significantly improve business performance.
As an organizational learning process continues and its knowledge base expands, the knowledge-creating company integrates its knowledge into its business processes, products, and services. This makes it a highly innovative and agile provider of high quality products and customer services and a formidable competitor in the marketplace.
IV. LECTURE NOTES (con’t)

Summary

● **Strategic Uses of Information Technology.** Information technologies can support many competitive strategies. They can help a business cut costs, differentiate and innovate in its products and services, promote growth, develop alliances, lock in customers and suppliers, create switching costs, raise barriers to entry, and leverage its investment in IT resources. Thus, information technology can help a business gain a competitive advantage in its relationships with customers, suppliers, competitors, new entrants, and producers of substitute products. Refer to Figures 2.3 and 2.5 for summaries of the uses of information technology for strategic advantage.

● **Building a Customer-Focuses Business.** A key strategic uses of internet technologies is to build a company that develops its business value by making customer value its strategic focus. Customer-focuses companies use Internet, intranet, and extranet e-commerce websites and services to keep track of their customers’ preferences; supply products, services, and information anytime, anywhere; and provide services tailored to the individual needs of their customers.

● **Reengineering Business Processes.** Information technology is a key ingredient in reengineering business operations by enabling radical changes to business processes that dramatically improve their efficiency and effectiveness. Internet technologies can play a major role in supporting innovative changes in the design of workflows, job requirements, and organizational structures in a company.

● **Becoming an Agile Company.** A business can use information technology to help it become an agile company. Then it can prosper in rapidly changing markets with broad product ranges and short model lifetimes in which it must process orders in arbitrary lot sizes, and can offer its customers customized products while maintaining high volumes of production. An agile company depends heavily on Internet technologies to help it be responsive to its customers with customized solutions to their needs and cooperate with its customers, suppliers, and other businesses to bring products to market as rapidly and cost-effectively as possible.

● **Creating a Virtual Company.** Forming virtual companies has become an important competitive strategy in today’s dynamic global markets. Internet and other information technologies play an important role in providing computing and telecommunication resources to support the communications, coordination, and information flows needed. Managers of a virtual company depend on IT to help them manage a network of people, knowledge, financial, and physical resources provided by many business partners to quickly take advantage of rapidly changing market opportunities.

● **Building a Knowledge-Creating Company.** Lasting competitive advantage today can only come from innovative use and management of organizational knowledge by knowledge-creating companies and learning organizations. Internet technologies are widely used in knowledge management systems to support the creation and dissemination of business knowledge and its integration into new products, services, and business processes.
V. KEY TERMS AND CONCEPTS - DEFINED

**Agile Company (54):**
A company with the ability to profitably operate in a competitive environment of continual and unpredictable changes in customer opportunities.

**Business Process Reengineering (51):**
The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in cost, quality, speed, and service.

**Competitive Forces (42):**
A business must confront (1) rivalry of competitors within its industry, (2) threat of new entrants, (3) threat of substitutes, (4) the bargaining power of customers, and (5) the bargaining power of suppliers.

**Competitive Strategies (43):**
A business can develop cost leadership, product differentiation, and business innovation strategies to confront its competitive forces.

**Creating Switching Costs (45):**
The cost in time, money, effort, and inconvenience that it would take a customer or supplier to switch its business to a firm’s competitors.

**Customer-Focused business (47):**
Internet technologies enable a company to emphasize customer value as its strategic focus.

**Interenterprise information systems (45):**
A business can use information systems to build barriers to entry, promote innovation, create switching costs, etc.

**Knowledge-Creating Company (57):**
A firm that consistently creates new business knowledge, disseminates it widely throughout the company, and quickly builds the new knowledge into their products and services.

**Knowledge Management System (58):**
An information system that helps knowledge workers create, organize, and make available important business knowledge, wherever and whenever it’s needed in an organization.

**Leveraging Investment in IT (46):**
A firm can leverage investment in information technology by developing new products and services.

**Locking in Customers and Suppliers (44):**
Building valuable relationships with customers and suppliers, which deter them from abandoning a firm for its competitors or intimidating it into accepting less profitable relationships.

**Raising Barriers to Entry (46):**
Technological, financial, or legal requirements which deter firms from entering an industry.

**Strategic Information System (40):**
Information systems that provide a business with competitive products and service that give it a strategic advantage over its competitors in the marketplace.

**Strategic uses of Information Technology (51):**
Information systems, which promote business innovation, improve operational efficiency, and build strategic information resources for a firm.
**Strategic uses of Internet Technologies (43):**
The Internet promises to be an attractive and cost-efficient way for many companies to develop strategic collaboration, operations, marketing, and alliances needed to solve and succeed in today’s fast-changing global markets.

**Value Chain (49):**
Viewing a firm as a series or chain of basic activities that add value to its products and services and thus add a margin of value to the firm.

**Virtual Company (56):**
An organization that uses information technology to link people, assets, and ideas.
VI. REVIEW QUIZ - Match one of the key terms and concepts

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VII. ANSWERS TO DISCUSSION QUESTIONS

1. Suppose you are a manager being asked to develop e-business and e-commerce applications to gain a competitive advantage in an important market for your company. What reservations might you have about doing so? Why?

Unless the individual is familiar with the tools involved in information technology, and how to effectively use these tools to accomplish the given task, there is always a high level of apprehension. Reservations would be the fear of being totally out of the realm of this dynamic field of technology, and the feeling of helplessness and dependence on others.

2. How could a business use information technology to increase switching costs and lock in its customers and suppliers? Use business examples to support your answers.

Switching Costs: Investment in IT can make customers or suppliers depend on the continued use of your system, therefore, they are reluctant to pay the cost in time, money, effort, and inconvenience that it would take to change to another firm.

Lock in customers and suppliers: Investment in IT can lock in customers and suppliers by building valuable relationships with them, where both parties are experiencing mutual benefits; therefore they are reluctant to go to another firm.

3. How could a business leverage its investment in information technology to build strategic IT capabilities that serve as a barrier to entry by new entrants into its markets?

The cost of building and maintaining a strategic IT platform can be very expensive. Businesses may look to leverage some of these costs to their customers, thereby building IT platforms that can be utilized by their customers and suppliers. Initially, both the company and the customer are experiencing mutual benefits from the new system; however, as time goes by the customers become dependent on using the platform. In the long run, the company’s investment in IT results in locking in their customers and suppliers, creates switching costs, and creates barriers to entry from competitors.

4. Refer to the Real World Case of GE, Dell, Intel, and Others in the chapter. Can information technology give a competitive advantage to a small business? Why or why not? Use an example to illustrate your answer.

Reasons could include:
- A small business can use the level of technology that it can afford to make improvements in its value chain.
- A business of any size can adopt a strategic plan for the use of IT that will enable it to improve its competitive status whether through the creation of a Web-based e-commerce or e-business feature, or through the improvement of its relationship with its customers and suppliers.
- IT can enable even small businesses to reengineer its business processes.
- IT can enable even small businesses to built at its level of affordability a knowledge-based company.
5. **What strategic role can information technology play in business process reengineering and total quality management?**

Information technology can play a vital role in BPR and TQM. Using the technology involved in BPR, an organization can achieve dramatic improvements in areas such as cost, quality, speed and service. Information technology can also be used to enable a firm to recognize improvements in quality, productivity, flexibility, timeliness, and customer responsiveness. Thus, technology in BPR and TQM can be used as tools and methods to improve the current way of doing business.

6. **How can Internet technologies help a business form strategic alliances with its customers, suppliers, and others?**

Information technology can help a business form strategic alliances with its customers, suppliers, and others as they are able to communicate, collaborate, and share information in ways that were never before possible. By establishing strategic alliances, organizations are able to provide better quality products and services to their customers in a more efficient manner.

7. **How could a business use the Internet technologies to form a virtual company, or become an agile competitor?**

Companies can use the Internet to publish information about themselves and their products. Through their presence on the Internet, organizations can seek quick access to new markets, and allows them to create virtual companies and to be agile competitors. The Internet promises to be a cost-efficient way for companies to develop strategic collaboration, operations, marketing, and alliances in global markets. Through the Internet, organizations can break time, geographic, cost, and structural barriers.

8. **Refer to Real World Case on the U.S. Department of Commerce in the chapter. Is the AskMe system intended to help the DOC become a knowledge-creating organization? Why or why not?**

Not primarily. The main objective of the AskMe system is to organize or catalogue the knowledge already existing within the organization in order to improve the efficiency of its access and retrieval, or even its location at all. Thus, its main focus is not to support the creation of the knowledge itself. A secondary objective, achieved through reports on popular topics, is to identify areas where there might be a need to improve the current expertise. This could be argued to help knowledge-creation.

9. **Information Technology can’t really give a company a strategic advantage, because most competitive advantages don’t last more than a few years and soon become strategic necessities, which just raise the stakes of the game. Discuss.**

Students’ responses will vary. However, information technology for early innovators certainly can give a company a competitive advantage. Although technology is changing at a rapid pace, the first company to gain acceptance stand to capture a substantial market share before the competitors can catch up. By the time that other organizations catch up, the originator has potentially realized a large market share, and captured substantial customer loyalty.

10. **MIS author and consultant Peter Keen says: “We have learned over the past decade that it is not technology that creates a competitive edge, but the management process that exploits technology.” What does he mean? Do you agree or disagree? Why?**

Students’ responses will vary. Technology and its related applications are developing at a rapid pace. If organizations are to compete successfully in today’s marketplace, they have little choice but to be behind the eight ball. The management of the technology and the development of innovative ideas are the ingredients that make companies successful today.
1. **Avent Marshall and Hilton Hotels: Customer-Focused e-Business**

   a. Which site provides you with the best quality of service as a prospective customer? Explain.

   b. How could these companies improve their website design and marketing to offer even better services to their customers and prospective customers?

   Students’ answers will vary. Both Avent and Hilton Hotels offer an attractive and fairly easy to use interface. Students may note each site's ease of use. Site visitors typically have a specific objective in mind when visiting a site, and they evaluate the site's performance according to how quickly and successfully the site allowed them to meet their objective. However, e-commerce vendors have several objectives:
   - Up-sell
   - Cross-sell
   - Promote return business
   - Facilitate word of mouth promotion
   - Reinforce their brand's image
2. **Sabre’s Travelocity and American Airlines: Competing for e-Travel Services**

   a. **How do their e-commerce websites and business models seem to differ?**

      Both websites provide a variety of travel related booking services. However, the AA website highlights AA related services and allows visitors to access their Frequent Flier accounts whereas the Travelocity site provides more comprehensive travel information.

   b. **Refer to the summaries of strategic uses of IT in Figures 2.3 and 2.5. Which strategies can you see each company using? Explain.**

      From Figure 2.3 students should basically be able to give examples for the majority of these strategies. For example, both companies are striving to keep their costs low by allowing potential customers to access the information for themselves. This saves time in areas such as personnel in call centers who would have to look the information up for the customer and give it to them over the phone.

   c. **How has the new entrant to this market, Orbitz (www.orbitz.com), sought to gain a competitive advantage among its well-established competitors?**

      Students should use an Internet search engine to learn more about Orbitz. Orbitz, owned by several major air carriers, obtained signed contracts from many major air carriers guaranteeing them the lowest available price on many fairs. Bargain hunters quickly noticed Orbitz met or beat the best prices available on other sites and quickly adopted Orbitz as their main air travel booking site. This enabled Orbitz to leap into one of the top travel booking sites in a matter of months after start up and earn revenues that the other leading sites had taken years to achieve.


   d. **What strategies might traditional travel agents adopt in order to compete?**

      Students' answers will vary. Travel agents must find products or services that web sites do not or cannot offer. Travel agents have the ability to learn, incorporate, and enforce an organization's employee travel policies. Through such a partnership arrangement, organizations may find it cheaper and easier to let travel agents manage and enforce their travel policies rather than doing it themselves. Travelers find it easier to get necessary information regarding travel, accommodations, visas, and a variety of other tips from a seasoned travel agent than from a website. Travel agents can provide personalized service at the individual level.
3. **Assessing Strategy and Business Performance**

   a. Create a spreadsheet based on these data. Your spreadsheet should include measures of percentage change in revenues, earnings per share and stock price. You should also compute the price earnings (PE) ratio, which is stock price divided by earnings per share. Note that some companies may have no earning for a particular year so that the PE ratio cannot be computed for that year. Rather than display "DIV/0" in the calculated cell when this happens, savvy spreadsheet developers will write a formula to display a text message such as "No Earnings" instead.

   b. Create appropriate graphs highlighting trends in the performance of each company.

   [See Data/Solutions Files - Ch 02 - Solutions.xls]

   c. Write a brief (1-page) report addressing how successful each company appears to be in maintaining strategic advantage. How important were general market conditions in affecting the financial performance of your companies?

   eBay appears to be a rare and outstanding success that defies dot-com, high tech, and over all market trends. In the long run, eBay may find itself operating contra-cyclically. In other words, during times of recession and as Americans seek better bargains, eBay's business may boom.
4. **Just-in-Time Inventory Systems for Pinnacle Manufacturing**

   a. Create a spreadsheet based on estimated below. Your spreadsheet should include a column showing the number of days of inventory of each raw material currently held (Inventory value divided by inventory used per production day). It should also include columns showing the inventory needed under the new system (inventory used per day times 10 or 5) and the reduction in inventory under the new system for each raw material. Finally include columns showing the dollar value of existing inventories, the dollar value of inventories under the new system and the reduction in dollar value of the inventories held.

   b. Assume that the annual cost of holding inventory is 10 percent times the level of inventory held. Add a summary column showing the overall annual savings for the new system.

[See Data/Solutions Files - Ch 02 - Exercise 4.xls]
5. **Knowledge Management**

a. **What steps might a manager take to encourage his or her employees to use their organization's knowledge management system?**

   Students' answers will vary, but they should remain practical. Managers might consider any or all of the following: Train employees about how to use knowledge management tools. Provide practical demonstrations of how these tools immediately benefit the employee and also the organization. Recognize and reward early technology adopters. Ensure that managers lead the way in usage.

b. **Should managers set minimum quotas for system usage for each employee? Why or why not?**

   No. If managers "keep score" in this way, then employees can easily figure out how to inflate their scores. For example, an employee can spend a few minutes each morning opening and closing various items in a knowledge management system while not actually benefiting from the activity.

c. **Aside from employee quotas, how else might an organization benefit from usage statistics?**

   Students' answers will vary, but they should remain practical. For example, managers should primarily reflect on the processes affecting the numbers. They should ask themselves several questions. Have my employees received sufficient training? Have I adequately demonstrated the tool's usefulness? What more can I do to promote the tool? Is the tool truly useful? Could developers or content managers improve the tools in some fashion? Is the tool sufficiently accessible?

*Product Websites*

Exchange and Domino are the leading, proprietary e-mail and groupware vendors. WorkSite is one of the most sophisticated and widely adopted 3-tier, web-based applications available.


IX. ANSWERS TO REAL WORLD CASES

RWC 1: GE, Dell, Intel and Others: The Competitive Advantage of Information Technology

1. Do you agree with the argument made by Nick Carr to support his position that IT no longer gives companies a competitive advantage? Why or why not?

Discussion points would include the following:
- IT costs are now the same as other traditional costs such as human resources, physical resources, etc. As such IT costs are not as important in terms of the impact on a company’s strategic planning.
- If all companies in a competitive industry invest in IT at the same approximate level of expenditure then IT cannot be a strategic advantage to a given company.
- The IT infrastructure changes rapidly and thus a continual investment in new IT influences a company’s strategic planning.
- The IT infrastructure and the continual improvements made to it allow a company to adjust the mix of traditional resources such as physical and human resources to provide a highly competitive company.

2. Do you agree with the argument made by the business leaders in this case in support of the competitive advantage that IT can provide to a business? Why or why not?

Points to consider would include:
- The lifeblood for productivity in a service oriented company is IT and not plants and equipment.
- How it is used determines the competitive advantage of the IT infrastructure.
- Some segments of the IT infrastructure are reaching maturity and not much can be gained by additional changes; however other areas aren’t close to maturity and gains in competitive advantage can still be made.
- All companies are not at the same level of IT usage and you cannot generalize that increased IT expenditures no longer have value to a company.

3. What are several ways that IT could provide a competitive advantage to a business? Use some of the companies mentioned in this case as examples. Visit their websites to gather more information to help you answer.

Ways to provide a competitive advantage may include:
- Improve the customer relationship management system.
- Create new uses for information to remain competitive.
- Leveraging the knowledge-capital as an integral part of strategic planning.
- Determining the best mix of knowledge, software and hardware to be highly competitive.
- Improve the value chain for the company.
RWC 2: The U.C. Department of Commerce: Using IT to Tap Experts’ Know-How Through Knowledge Management

1. What are the key business challenges facing companies in supporting their global marketing and expansion efforts? How is the AskMe knowledge management system helping to meet this challenge? Explain.

Some challenges to be considered could be:
- Importing and exporting (customs) regulations
- Different tax codes
- Legal environment (for instance, privacy laws, advertising, employment, etc.)
- Local competition profile
- Local business culture
- Supra-national regulations (i.e. NAFTA, EU, etc.)

The AskMe knowledge management system allows the access to relevant information in a timely way. By cataloging and indexing existing knowledge companies benefit from prior experiences of other organizations, and allows the DOC to cumulatively expand its database.

2. How can the AskMe system help to identify weaknesses in global business knowledge within the Department of Commerce?

Two alternative ways to do so would be:
- By cross-indexing existing knowledge across different categories (country, culture, tax laws, customs regulations, etc.) the DOC can identify gaps in certain areas.
- By reporting on popular topics of interest allowing for the allocation of more resources to those areas.

3. What other global trade situations could the AskMe system provide information about? Provide some examples.

Possible examples would be:
- Establishment of operating subsidiaries in other countries. Many require a local partner in order to authorize the establishment of foreign corporations.
- Exports of certain technologies and/or to certain countries is restricted or outright not allowed.
- Many countries impose quotas on certain imports to protect local industry.
- Existence of either reciprocal trade agreements or reciprocal trade sanctions that may influence exports.
RWC 3: Shareware Grows Up: CIOs Are Saving Money by Pooling Resources and Software

1. Organizations are constantly striving to achieve competitive advantage, often through their information technologies. Given this constant, why does Hansen suggest that competition among members shouldn’t be an issue because the shared assets don’t bring competitive advantage? Explain.

   Competition should not be an issue because the assets to be shared relate to implementation, maintenance and support of software. These features are seen as routine work but would hardly translate into competitive advantages per se. Rather, the differentiation occurs in the logic embedded in software modules that most likely will not be available to other members of the cooperative.

2. What do you see as the potential risks associated with the Avalanche approach? Provide some examples.

   Examples could include:
   - Legal consequences. Even though the cooperative is responsible for providing a “clean title”, intellectual property issues would still be a concern given that the legal environment trails technology.
   - Companies may become dependent on another member development efforts, and are subject to the risk that the providing member may decide to discontinue participation.
   - It requires reaching a critical mass of participants and shared assets in order to be attractive. Failure to achieve that threshold may endanger participation.
   - Companies may share assets that they later decide they would like to keep proprietary. Once shared the originating member loses rights to it.

3. How could other companies apply the cooperative model used by Avalanche to achieve efficiencies in areas other than software support? Explain.

   Examples could include:
   - Companies with a similar installed software base could pool to share the development cost of non mission-critical upgrades and enhancements.
   - Members could increase their leverage by negotiating agreements with vendors through the cooperative.
RWC 4: CDW and Harrah’s Entertainment: Developing Strategic Customer-Loyalty Systems

1. Does CDW’s customer loyalty program give them a competitive advantage? Why or why not?

   Discussion points to consider:
   
   • Loyalty program is a system that differentiates CDW from its competitors.
   • CDW used IT in an innovative way to move beyond a CRM package to a system that measures customer satisfaction and can benchmark loyalty.
   • The loyalty program provides CDW with an alliance strategy with its customers by locking in the customers to the CDW system.

2. What is the strategic value of Harrah’s approach to determining and rewarding customer loyalty?

   Points to include in the discussion would include:
   
   • Differentiate Harrah from its competitors in terms of service to different groups of customers.
   • Promote growth through improve targeting of multiple customer groups on a real-time basis.
   • Creating switching costs in multiple customer groups to lock customers in all groups into continuing to have loyalty to Harrah’s.

3. What else could CDW and Harrah’s do to truly become customer-focused businesses? Visit their websites to help you suggest several alternatives.

   Suggestions could include:
   
   CDW –
   • Online competitive pricing or auction features as products age.
   • Web site redesign to improve appearance.
   • Better leverage IT to ensure that every order is filled as quickly as possible by creating alliances with supplies that permit direct shipment from the supplier to customers to ensure best price and delivery for loyal customers.

   Harrah’s -
   • Leverage IT investments by expanding the analytical mining of the data.
   • Differentiate Harrah’s from its competitors by using the data mining to expand products and services offered to repeat customers.
   • Use IT to develop new products and services that will attract new customers to Harrah’s.