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2 Competing with Information Technology

CHAPTER OVERVIEW

Chapter 2: Competing with Information Technology introduces fundamental concepts of competitive advantage through information technology and illustrates major strategic applications of information systems.

LEARNING OBJECTIVES

After reading and studying this chapter, you should be able to:

1. Identify several basic competitive strategies and explain how they 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 can help a business gain competitive advantages.
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 form a virtual company.
5. Explain how knowledge management systems can help a business gain strategic advantages.

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-Focused Business.** A key strategic use of Internet technologies is to build a company that develops its business value by making customer value its strategic focus. Customer-focused companies use Internet, intranet, and extranet e-commerce Web sites and services to keep track of their customers' preferences; to supply products, services, and information anytime or anywhere; and to provide services tailored to the individual needs of the customers.

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• **Reengineering Business Processes.** Information technology is a key ingredient in reengineering business operations because it enables 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; it can also offer its customers customized products while it maintains high volumes of production. An agile company depends heavily on Internet technologies to help it respond to its customers with customized solutions, and to 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 a key role in providing computing and telecommunications 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 take advantage of rapidly changing market opportunities.

• **Building a Knowledge-Creating Company.** Lasting competitive advantage today can only come from the 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.

KEY TERMS AND CONCEPTS

1. **Agile Company ():**
   An organization with the ability to profitably operate in a competitive environment of continual and unpredictable changes by adapting quickly to emerging customer preferences and producing high-quality, high-performance, customer-configured products and services.

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

3. **Competitive Forces ():**
   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
   5) the bargaining power of suppliers.

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4. **Competitive Strategies ():**
   A business can develop:
   1) cost leadership
   2) product differentiation
   3) innovation
   4) growth
   5) alliance
   or other strategies to confront its competitive forces.

5. **Create switching costs ():**
   A strategy designed to increase 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.

6. **Customer value ():**
   The customer perceives the value or benefit associated with a given transaction or business relationship. Vendors can provide this by recognizing that quality rather than price has become the primary determinant. Vendors must focus on anticipating future needs, responding to customer concerns, and providing top-quality service.

7. **Interenterprise information systems ():**
   These systems consist of extranets linking suppliers, customers, subcontractors, and competitors together.

8. **Knowledge-Creating Company ():**
   Also known as "learning organizations", are companies that consistently create new business knowledge, disseminate it widely throughout the company, and quickly build the new knowledge into their products, services, and business processes.

9. **Knowledge Management System ():**
   An information system that helps manage organizational learning and business know-how. These systems help knowledge workers create, organize, and make available important business knowledge wherever and whenever it's needed.

10. **Leverage investment in IT ():**
    Developing new products, services, and business processes through the use of new information made possible by investments in information technology.

11. **Lock in Customers and Suppliers ():**
    A business may lock in customers and suppliers by building valuable relationships with customers or by intimidating managers into accepting a less profitable relationship.

12. **Raise Barriers to Entry ():**
    An organization may raise barriers to entry by creating technological, financial, or legal requirements that deter competitors from offering similar products or services.

13. **Strategic Information System ():**
    Strategic information systems are information systems that support or shape an organization's competitive position and strategies.

14. **Value Chain ():**
    A series of activities with each activity adding value to an organization's products and services.

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15. **Virtual Company ():**
Also called a virtual corporation or virtual organization, is an organization that uses information technology to link independent people, assets, and ideas.

ANSWERS TO REVIEW QUIZ

Q.	A.	Key Term	Q.	A.	Key Term
1		Competitive forces	9		Leverage investment in IT
2		Competitive strategies	10		Business process reengineering
3		Raise barriers to entry	11		Agile company
4		Lock in customers and suppliers	12		Virtual company
5		Switching costs	13		Knowledge-creating company
6		Strategic information systems	14		Knowledge management system
7		Customer value	15		Interenterprise information systems
8		Value Chain			

ANSWERS TO DISCUSSION QUESTIONS

1. **Suppose you are a manager being asked to develop computer-based 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 and processes involved in developing information technology applications, they will have a high level of apprehension In fact, developing an information system might be completely beyond the capabilities of the manager because his/her training and experience is in an entirely separate field. Reservations would include the fear of being out of one's depth and feelings of helplessness, insecurity, and dependence on others.

The individual may also wonder whether or not an appropriate application might be obtained off the shelf. Off-the-shelf software, though not easily customizable, generally costs less than custom software development. The individual might not understand the different means of obtaining an information system (or the pros and cons of each method), and might not understand the different ways in which it could affect the firm after its implementation. Also, the individual might not be competent to gauge the differences of the application obtained in any of several different ways.

Lastly, he or she might also feel concerned about how the software may affect their position within the organization. Change isn't easy, and if it isn't supported at the very top management levels, it may fail due to lack of organizational will and this failure would look bad on their performance review.

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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

A business might undertake projects to integrate some of its information systems with its customers' systems in order to provide them with more timely, accurate, and useful information. The business might even provide applications for its customer's use at low or no cost. Customers later considering changing suppliers would lose these benefits. Indeed, the very process of developing these tools will help managers increase their familiarity with their customers and allow them to tune their information resources to their customer's needs. This relationship will further serve to lock in customers.

Examples

For example, Fed Ex provides its customers with package tracking information. Medical supply companies provide hospitals with inventory management and re-ordering systems. Wal-Mart will soon provide small medical practices with reduced cost patient management systems. Currently, Wal-Mart creates switching costs for customers – customers do not go elsewhere because of Wal-Mart's low prices – and for suppliers by becoming a very large customer for each supplier.

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

Businesses may leverage its IT platforms by connecting them with their customers and suppliers to provide better communications. Initially, both the company and the customer benefit from the new system. However, as time goes by the customers will tend to integrate these systems into their own core processes thereby becoming dependent on the platform. In the long run, the company's investment in IT results in locking in their customers and suppliers and creating switching costs. The high costs associated with developing these systems serve as barriers to entry for competitors.

4. Review the Real World Challenge introduced in the chapter. In such a major transformative project where no one can really envision what the end product (or end company) will look like, how should organizations set out to create these technology-enabled solutions? What kind of approaches would work best? Worst?

The first thing to do is an in-depth analysis of just what information is needed/wanted by the users of the system. This will determine how the system will look and what it will do. This means a serious analysis of the jobs that the employees will do, their information needs, and their outputs. Once that is done the new system can be developed, all the while remembering that change is the name of the game in a situation like this where much of the future is uncertain. Particularly in cases like this, senior management needs to be very flexible about the immediate reaction to systems as they are rolled out. The business and the environment will both be changing quickly as the firm positions itself in a new arena, and changes to major will need to be made as the changes in business processes and environment take place. Uncertainty means change, and senior management needs to be flexible to the changes that will need to occur in IT as the path of the firms unfolds.

Best approaches: those that focus on known parameters of the future organization; systems that are flexible to changes both within and without the organization; systems that have the capacity for growth and change. Perhaps the best solution would be a combination of commercially available software to handle the current/non-strategic real estate applications, and a new customized software solution to handle the strategic logistic functions of the firm's new direction and focus.

Worst approaches: those that focus on the current structure of the organization; systems based on legacy systems or other current systems that cannot be modified to fit the changing needs of the new organization; systems that assume knowledge of what the new organization will ultimately look like ("best guess" solutions).

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5. What strategic role can information play in business process reengineering?

Information plays a critical role in BPR initiatives. First, information about existing operations serves as a baseline for future comparison. Second, as new processes take shape, information in the form of feedback allows managers to evaluate and control these new processes. A thorough understanding of the current businesses processes must exist if reengineering is to take place; this information about the firm and its business processes must be available as needed in the firm for the reengineering process to proceed. Lastly, the organization may find ways to repackage this information for its customers' use.

Reengineering sometimes results in the creation of new products or services that previously did not exist. The reengineering of the ticketing structure of American Airlines by IBM ultimately resulted in the creation of an entire electronic ticketing industry that is today used for airlines, automobile rentals, hotels, and concerts.

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 by enabling communications, collaboration, and information sharing in ways that were never before possible. By virtue of working together online, managers can monitor and automatically capture process metrics, identify bottlenecks, and recommend process improvements within and between organizations.

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

Virtual company:
Example: a person or company could use the Internet to acquire customers and then farm out the work to suppliers. A simple example of this can be found managing contractors. A company solicits customers for contract work (customers) and then solicits reliable contractors who can do this work (suppliers). In exchange for a share in the contractor's earnings, the virtual company handles the billing and customer relations. It manages its reputation by monitoring the quality of the contractor's work. High performing contractors retain a larger percentage of their earnings, and low performing contractors are not invited to work on future contracts. Some software vendors now lease (or provide for free) web enabled business software to manage accounting, customer relations management, and office automation tasks (word processing, spreadsheets, calendaring, and e-mail). As a result, a truly virtual company need only a computer connected to the Internet and a web browser. Visit rentacoder.com for a reverse auction site version of this enterprise.

Agile competitor:
In addition to monitoring the marketing for business intelligence, an agile competitor might implement an Internet based system that allows its customers to configure their own products. For example, Dell allows its customers to configure computers to their own specifications to include type of CPU, motherboard, I/O devices, memory, monitor, and more. T-shirt and bumper sticker companies might allow customers to upload their own custom designs or work interactively with their own graphic designers to create a suitable product.

8. Consider the Real World Solution discussed in the chapter. Do you think CenterPoint Properties's success is the result of the new business model or the new technology deployed to support it (i.e., CUB)? Is it possible to distinguish one from the other? What are the implications for other companies as they seek to reinvent themselves in the future?

The new business model is, of course, very important to this endeavour. However, without the CUB system, this re-invention of the firm would not have been possible, which makes the CUB system central to the entire endeavour, not the business model. As the case stated, CUB becomes central to many meetings with firms that want to license or purchase CUB. This means that they can copy the

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business model easily enough, but they need something to organize and run the new business, i.e., CUB, and they do not want to have to reinvent the wheel when a product already exists that does the job so very well. While it is certainly possible to distinguish the business model from the system itself, the desire of many firms to license or purchase CUB demonstrates the inherent linkage between the two – CUB is the first system to handle this model, and it does it so well that it is recognized as the important management tool that it is.

As firms reinvent themselves, this success of CUB should show the benefits (and also some dangers) of spending the time, effort, and resources (money) to develop a first-rate product to handle a new business model. The benefits, of course, are having the one and only system to do the job with a new business model, which everyone now wants to have (or emulate). The risks are that, for whatever reason, the system will not be as successful as CUB and the investors will recognize that to the detriment of the developing firm. Another risk is maintaining the competitive advantage once other firms see what you have done. Many will now develop their own systems based on the new system, knowing what has been done, and they will do it faster and cheaper by following in the footsteps of the successful first system without many of the risks taken by the innovators.

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 that just raise the stakes of the game. Discuss.

Information technology for early innovators can give a company a temporary competitive advantage. Although technology changes at a rapid pace, the first company to gain acceptance stands to capture a substantial market share before its competitors can catch up. Apple's iPod serves as a good example. By the time that other organizations caught up, the Apple had realized a large market share and captured substantial customer loyalty.

On the other hand, competitors can learn from the leader's mistakes at very little cost other than running the risk that their competitor will succeed brilliantly. With these cheaply acquired insights, competitors can introduce their own products into an already primed marketplace and take it over with a superior product and/or a lower price.

However, a company can dominate an industry by flooding the market and crowding out the competition. An early strategy by Wal-Mart was to place a Wal-Mart store within driving distance of every customer in the United States. This flood of stores has left others (Target, K-Mart, etc.) playing "catch-up" when Wal-Mart places a store in an area too small to support two or more stores. Being the "early adopter" of this strategy, Wal-Mart has left no room for competitors to move into smaller areas that will only support a single store. At the same time, these Wal-Mart stores are supported by the Wal-Mart supply chain, the infrastructure of which exists to support all Wal-Mart operations at low marginal costs, and is in turn supported by the massive Wal-Mart information network which makes all this possible for the Wal-Mart organization.

10. MIS author and consultant Peter Keen says: "We have learned 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?

What does it mean? Keen recognizes that buying and installing a new application simply because a competitor has it does little to guarantee its successful application. It is possible to "throw money at a problem" or to throw it at technology, meaning that you hope that spending the money on technology will solve your problem. However, spending this money aimlessly does not direct it at a specific problem, nor does it focus on anything other than buying technology.

Agreed: It takes leadership to foster the organizational changes enabled by new technologies. A technology application should be specifically designed/purchased to provide a solution to a specific business problem then managed to solve that problem.

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ANSWERS TO ANALYSIS EXERCISES

1. End-User Computing: Skill Assessment

Note that students tend to overestimate their computing skills when self-reporting.

a. Word processing: About how many words per minute can you type? Do you use styles to manage document formatting? Have you ever set up your own mail merge template and data source? Have you created your own macros to handle repetitive tasks? Have you ever added branching or looping logic in your macro programs?

Most students feel they are competent at word processing if they can type, save, and print their papers. Today's knowledge workers also use document styles, mail merge, and macros to create shortcuts to repetitive tasks.

b. Spreadsheets: Do you know the order of operations your spreadsheet program uses (what does "_5*2^2- 10" equal)? Do you know how to automatically sort data in a spreadsheet? Do you know how to create graphs and charts from spreadsheet data? Can you build pivot tables from spreadsheet data? Do you know the difference between a relative and a fixed cell reference? Do you know how to use functions in your spreadsheet equations? Do you know how to use the IF function? Have you created your own macros to handle repetitive tasks? Have you ever added branching or looping logic in your macro programs?

Students should be able to calculate the answer to the equation provided without programming it into a spreadsheet. The correct order of operations for this equation is power, multiplication, addition, and the answer is 10. Basic users must understand order of operations, fixed and relative cell references, how to apply functions, and how to create graphs. Intermediate users can use pivot tables to rapidly cross-tabulate data, the IF function to create conditional answers, and create basic macros.

c. Presentations: Have you ever used presentation software to create presentation outlines? Have you added your own multimedia content to a presentation? Do you know how to add charts and graphs from spreadsheet software into your presentations so that they automatically update when the spreadsheet data change?

Students should be able to prepare presentation outlines that include graphics imported from or linked to spreadsheet applications. Advanced users will be able to include audio and video elements into their presentations as well as set slide timing to automate stand-alone or kiosk presentations.

d. Database: Have you ever imported data into a database from a text file? Have you ever written queries to sort or filter data stored in a database table? Have you built reports to format your data for output? Have you built forms to aid in manual data entry? Have you built functions or programs to manipulate data stored in database tables?

Most students will have very little database experience. Yet, managers can take great advantage of a database system's built-in report generating features. To do this, users need basic table design, data import, and query writing skills. Intermediate desktop database users will have basic form design skills.

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e. File Management: Can you store or locate a specific file on a particular storage device? If you receive an attachment on an email can you store it on your hard drive in a location where you can find it again? Can you create specific folder for a group of related files, then navigate to it when necessary, or direct someone else to that location?

Many computer users do not know how to navigate around a hard drive or other storage device (e.g., a flash drive or a CD) to find a particular file. Neither do they know how to access and store a file attached to an email onto a storage device. Understanding file structures is a basic computer skill needed by all computer users.

f. Internet: Do you know how to navigate your way around the Internet? If someone gives you a specific URL, can you access that location? Do you know what a URL is? Can you modify your home page on your favorite Web browser? Do you know how to use an anti-virus program? Can you use the Status Bar to determine if a link is trying to spoof you to another site? Email is arguably the largest use of the Internet today. Can you send and receive email, build a mailing list, and can you send and receive attachments?

Using the Internet is considered a basic computer skill in today's world. Anyone using the Internet should be competent in some basic skills such using an anti-virus program, setting a home page, knowing what location a link is actually taking you to, and handling email, working with email attachments, and building email lists. You should also know some basic Internet terminology such as URL and Domain Name.

2. Marketing: Competitive Intelligence: Strategic Marketing

Note: encourage students to use the Internet and your institution's career services department to gather information for this assignment. A Lexis/Nexis search of current periodicals, if available, will also significantly aid in this search. Encourage students to directly interview recruiters. Encourage classroom discussion about the various information systems used and the value of the information found.

a. Product: Which business majors are presently in greatest demand by employers? Use entry-level salaries as the primary indicator for demand.

Answers to this question will depend on the year, region, and major researched.

b. Product: Which colleges or universities in your region pose the greatest competitive threat to students with your major?

Answers to this question will depend on the year, region, and major researched.

c. Price: What is the average salary for entry-level employees in your major and geographic region? Is salary your top concern? Why or why not?

Answers to this question will depend on the year, region, and major researched. Place-bound students should logically rate geography as more important. Consider suggesting that students weigh the opportunities their first job creates higher than their initial salary.

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d. Place: Which areas of the country are currently experiencing the greatest employment growth?

Answers to this question will depend on the year, region, and major researched.

e. Promotion: What is your marketing plan? Describe how you plan to get your name and qualifications in front of prospective employers. How can the Internet help you get noticed?

Many institutions offer a resume publishing service for their students. The Internet also offers students with the unprecedented ability to self-publish. Students can use this ability to publish their own resumes and CVs. Students may also use this ability to publish portfolios of their work. Such portfolios might include sample programs, original research or analysis, or graphic documentation of their projects or significant professional activities.

The Internet has opened the doors to virtually all applicants. As a result, on-line applications and job search sites do little to help an applicant get noticed. Personal contacts still rate highly in effective job search strategies. To that end, consider encouraging students to develop and maintain personal address books for their professional business contacts. These contacts should include peers in the business school, professors, recruiters, and people who can serve as personal references.

This might be a good time to emphasis the negative impact the Internet can have on a job applicant's prospects. Students often publish unflattering information about themselves on Facebook, MySpace, Twitter, and other social network sites where prospective employers may find it. Encourage students to "Google" themselves, see information is readily available to employers, and attempt to mitigate the damage, if any.

3. Competing Against Free: Wikipedia Faces Down Encyclopedia Britannica

a. How does the Wikimedia Foundation meet the criteria for an agile company?

The various Wiki-related knowledge bases accommodate hundreds of languages. It provides numerous articles that can be updated in seconds. It also provides a tool through which users can *request* articles. This local customization and ability to quickly correct, improve, or add information makes the Wiki Foundation extremely agile.

b. How does the Wikimedia Foundation meet the criteria for a virtual company?

At present, the Wiki Foundation provides information on-line only. It has no storefront. What's more, contributors do so from their own homes and offices around the world. Wikimedia has only a few dozen employees on its payroll, and they primarily manage its hardware, software, public relations, legal matters, and facilities. Several hundred thousand more people actively contribute to its various projects.

c. How does the Wikimedia Foundation meet the criteria for a knowledge-creating organization?

Not only does the Wikimedia Foundation produce readily editable information through very powerful editing tools, but it uses these same tools to arbitrate disputes and publish and revise policy. In short, any user can publish a policy change recommendation – or edit a policy directly. These edits prompt vigorous discussion and revision as participants reach consensus. Not only are current policies available for review, but so are all previous policy versions and related discussions.

d. How would you recommend that Encyclopedia Britannica adapt to this new threat?

One obvious approach would merge the OED methodology with Wikipedia's to produce a hybrid. This approach is not without precedent. The *Oxford English Dictionary* was originally created in the 19th century through voluntary submissions processed by professional editors. *Wikipedia* accepts any submission and instantly publishes them, no matter how inaccurate or ridiculous, in hopes that others

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will find and correct accidental or deliberate errors. Indeed, the *Encyclopedia Britannica* plans to merge both the OED and the Wikipedia approaches and create the means for readers to update old articles or contribute new ones while first subjecting these contributions to professional editorial review.[1] The venerable encyclopedia needs to act quickly as other online competitors have already adopted this very model.[2]

e. How does Wikiversity compare as an educational resource to traditional colleges and schools? How would a degree earned online from wikiversity.com be viewed as compared to a degree earned in a traditional learning environment? What learning resources are at Wikiversity that you can use to further your education right now?

Wikiversity is in the very early stages of development. It is not yet accredited by any recognized degree-granting bodies. As such, any diplomas or degrees would not be recognized as valid at this time. However, there are a number of resources available to further one's education in a growing number of areas as people place resources on the Wikiversity site, and this can make it a valuable resource for education in specific areas, particularly because it is free.

4. Knowledge Management: Knowing What You Know

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.

Exchange[3]
Domino[4]
WorkSite[5]

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

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?

Yes.
Some workers need a good flogging from time to time.

No.
If managers "keep score" in this way, then employees can 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. Managers should spend their time trying to find out *why* employees aren't using the system and correcting those problems. The problems may stem from lack of training, poor application design, or lack of usefulness. Managers can correct many of these problems themselves rather than blame their subordinates.

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[1] http://arstechnica.com/web/news/2009/01/britannica-to-grind-wikipedia-beneath-its-heel-woth-small-moves-toward-openness.ars
[2] http://arstechnica.com/old/content/2007/02/citizendium.ars
[3] http://www.microsoft.com/exchange/
[4] http://www-01.ibm.com/software/lotus/
[5] http://www.interwoven.com/components/pagenext.jsp?topic=PRODUCT::WORKSITE

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c. Aside from setting employee usage quotas, how might an organization benefit from knowledge management system usage statistics?

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?
- Has the tool been adequately promoted?
- Could developers or content managers improve the tools in some fashion?
- Is the tool sufficiently accessible?
- Is the tool truly useful?
- How can I measure the impact on productivity that the adoption of these tools will presumably bring about?

5. Crowd-sourcing Ad Reviews

Do you *Like* This Ad?

Marketers dream of their ads going viral, but what works, what flops, and when is it time to change approaches? Facebook may be on the verge of turning advertising on its head with its automated user feedback system. Read CNNTech's article *How Facebook killed (most) spam* (http://bit.ly/fE5NMS) and then answer the questions below.

Questions:

a) List each type of user-generated feedback Facebook automatically monitors.

The article identifies the following types of user generated feedback:

- User "hides" an ad
- User marks an ad as "spam"
- User comments on an ad
- User "likes" an ad
- User clicks-through the ad

b) How do the users benefit?

Users find Facebook more "enjoyable".

c) How do advertisers benefit?

Developers (or advertisers) no longer feel "nitpicked". Implied, though not stated explicitly, developers are getting aggregated feedback from users without having to set up their own survey and analysis mechanisms.

d) How does Facebook benefit?

Since the system is automated, it's scalable. This means they won't have to keep adding employees to stamp out annoying "spam" as their system grows. They also won't need to create and enforce a complex list of rules. Lastly, better user experience turns into increased user loyalty.

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e) In your opinion, what obstacles will competitors have to overcome to compete with Facebook's approach to managing advertising?

This question asks students to think beyond the article's content. Potential challenges include:

- A 500 million person user base
- Name recognition
- User loyalty
- Massive hardware infrastructure

Facebook's rapidly expanding "like button" integration with other media outlets

ANSWERS TO REAL WORLD CHALLENGE/SOLUTION

Real World Challenge

1. What do you think will be the major challenges Center-Point will face as it embarks on its transformation from real estate manager into a provider of logistic solutions? What part of those challenges will be related to IT? What does your answer say about the importance of IT in organizations today?

Major challenges

- managing the strategic shift
- managing organizational cultural change
- developing new processes to support the shift
- developing new IT systems to support the new processes
- training employees

Major IT challenges

- creating a scalable infrastructure
- developing or acquiring the necessary systems to support the new processes
- integrating old and new systems
- updating IT employee skill sets

Conclusion

- IT is a critical component of strategic planning

2. What are some of the alternatives that CenterPoint has for procuring the new functionality required from their IT for the new business model? What are the advantages and disadvantages of each of those alternatives?

IT Alternatives

- in-house custom development

  Advantages

  - the solution is custom fit to the organization's needs
  - may provide functionality unavailable elsewhere and strategic advantage

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Disadvantages
- requires updating IT employee skill sets
- requires the most time to develop
- development costs
- time & cost risks are higher if IT is working with unfamiliar technologies

- purchase off-the-shelf software (OTS)

  Advantages
  - saves time
  - saves money

  Disadvantages
  - may lack flexibility
  - may lack functionality
  - expensive to customize

- outsourcing system development

  Advantages
  - instant access to expertise
  - may be cheaper than developing the system in-house
  - reduces burden of training IT staff
  - allows management to focus on core competencies

  Disadvantages
  - requires careful selection and management of outsourcing organization
  - creates both a dependency on and high switching costs with the vendor

- software as a service (SaaS)

  Advantages
  - faster to implement
  - no up-front investment in infrastructure
  - modern architecture (should) enable some customization
  - cloud based systems are generally scalable

  Disadvantages
  - requires the development or acquisition of in-house IT expertise

3. **Is it a good idea to roll out a new, large IT implementation at the same time the company is embarking on a major transformation? On the other hand, is it possible to radically transform a company without major changes in IT?**

   Do large IT implementations and radical transformation go together?

   - Yes
     - large IT implementations enable process reengineering (major transformation)

   Is it possible to transform an organization without a large concurrent IT implementation?

   - No
     - in all normal circumstances, the answer is "no"
   - Yes
     - but only if the "transformation" is engineered by demolitions experts

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Real World Solution

1. **To build or to buy is one of the central questions when it comes to provisioning technologies. How did Center-Point choose what to buy and what to develop internally? What lessons can be synthesized from its approach that can be applied to other companies in the future?**

   Methodology
   - purchase applications to support common real estate functions
   - develop special purpose applications required to support the new business model
   - use a common programming platform so all applications can communicate with each other

   Lessons
   - competitive advantage requires innovative, new software, or
   - it requires the innovative use of existing software
   - competitive advantages are relatively short lived as competitors catch up
   - common programming platforms facilitate interconnectivity

2. **What is your opinion on whether CenterPoint should possibly license CUB or act as a service provider? Do you think this would dilute CenterPoint's competitive position? What are the advantages and disadvantages of moving forward with this idea?**

   Advantages to becoming a service provider#
   - creates a barrier to entry for competitors
   - creates a new revenue stream to help pay for future development and updates
   - creates a halo effect for CenterPoint

   Disadvantages to becoming a service provider
   - may serve as a potential distraction from core competencies

ANSWERS TO REAL WORLD CASES

RWC 1: How to Win Friends and Influence Business People

Case Study Questions

1. **By changing the way his group talks about IT investments, CIO Tim Schaefer is trying to change the way the rest of the company sees IT. Why do you think this is necessary? What would be the prevailing mindset about IT in his company, such that he needs to do something about it? Provide some examples of how IT may be regarded in this organization.**

   Necessity
   It's important for IT to speak and understand the language or languages of the businesses they support. In Northwestern Mutual Life's case, the business speaks in the language of investments, returns, and risk. Using a common language helps reduce barriers to communication between IT and the business unit.

   Prevailing attitude
   The prevailing attitude had been that IT operated in its own, separate, alternative reality. IT had its own language and "special knowledge".

   Perception examples
   Schaefer used words such as "separate", "different", "black box", and "special knowledge" to describe how Northwestern Mutual Life perceived his organization. Schaefer wanted the business to perceive his organization in terms of assets with values, returns, and risks – terms with which the business managers were familiar.

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2. Chip Gliedman of Forrester Research breaks down IT risks into implementation and impact considerations. Why do you think these are so difficult to manage? What makes IT investments different from investments in other areas of a company?

Management difficulty
IT projects are difficult and the terms "implementation" and "impact" cover all project lifecycle aspects except maintenance. IT implementations pose their own special challenges because they frequently involve new and unproven technologies. IT impact also poses significant challenges because they may require both cultural and personal changes. Such changes aren't easy. For example, millions of people complain vociferously every time Facebook™ changes its user interface. Changing communications flows, job requirements, and reward systems invoke even stronger reactions. It's this human element that makes managing impact so challenging.

Difference
The main difference between the impact of a significant IT project and building a new manufacturing plant, for example, is that management isn't demanding people change their behavior when they build a new plant. Sure, they may be dealing with new tools and manufacturing processes, but with a major new IT system, job descriptions, communications, authority, and compensation models may all change. In short, IT projects are more likely to "move the cheese" for people who have devoted ten or twenty years toward achieving what they thought had been a fixed goal. Unlike the 70's when factory automation resulted in increased productivity and massive layoffs, the IT revolution has had a similar effect on mid-level management. The important difference is that mid-level managers are in a position to passively resist unwelcome changes, and this is something IT managers must constantly and diligently guard against.

3. Do you agree with the notion that IT investments can be treated in the same manner as financial investments, and similarly quantified by putting a dollar value to them? Why or why not? Would your answer change depending on the type of IT investment under consideration?

Yes
Cost, benefit, risk analysis typically provide enough information to make an informed business investment decision in many cases.

No
Larger projects demand business managers consider the competitive and regulatory environments as well as the organization's strategic plans when evaluating potential IT investments. These extend beyond the simple costs and risks associated with a new project, and they are notoriously difficult to quantify.

Change
A project's scale and scope should affect how much effort managers put into evaluating a particular IT investment proposal. Small, high value projects should consume minimal management time.

Real World Activities

1. Do you agree with the approach and metrics used by Northwestern Mutual to value their IT investments?

Agree
Business leaders need to make informed decisions. This can best be done using familiar terms.

Disagree
Some projects are simply too small or too urgent to bog down with overly detailed analysis. In short, "if we know we have to do it anyway, why bother with a cost/benefit analysis?"

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2. Can you think of alternative ways, and how those might stack up against those discussed in the case? Break into small groups with your classmates to discuss the pros and cons of alternative approaches to valuing the impacts of IT in a company.

General approach
The approach in this case involves providing information to business leaders using vocabulary they understand. I would recommend changing the vocabulary to suit the audience, though I wouldn't change the actual information provided. For example, the military thinks in terms of "actionable intelligence", "force multipliers", and "targets". Law firms think in terms of "matters", "due diligence", and "opposing parties".

Approach – IT centric
This approach places IT at the organization's core, where IT leaders make all the key IT-related decisions. Organizations following this approach will likely have a CEO with a strong IT or accounting background. American Airlines in the 1980's comes to mind, and they dominated their industry for two decades and remain out of bankruptcy even today.

Approach – Business centric
IT leaders provide IT cost and risk information to business leaders who then make all project selection decisions. This approach places IT as a "cost center" and business leaders negotiate amongst themselves how to allocate their investment budget. Business leaders take responsibility for valuing a project beyond the cost/risk information provided by IT. IT managers often have to beg to get funding for IT infrastructure projects that don't directly support any one specific business leader.

Approach – Decentralized
With this approach, there is no central IT organization. Business leaders are free to acquire what they need, when they need it so long as it falls within their budget. This approach places the least demand on project valuation. Accountability simply falls on the business leader to produce results.

Valuing
When evaluating the legs on a three legged stool, how does one "value" an individual leg? Without any one of the three legs, the stool will fall. Likewise, a bank, an airline, an investment firm, and most businesses, would simply fail, some within the day, should their IT systems completely fail. To value a new project, managers must estimate the impact the project will have on the business – increased sales, for example. On a more challenging note, however, managers must also determine what would happen to their business should they *not* implement a particular project. Will they find themselves in violation of a law? Will they see their market leadership and market share decline? How are they to determine the rate of decline when so much also depends on the actions of their competitors?

3. Go online and search for examples of IT projects that have been successful, as well as those that have failed. Make a list of the different factors that seem to influence the outcome of these implementations. Can you group them into the categories discussed in the case? Which seem to be the most important? Prepare a presentation to share your findings.

Examples
Atwood, Jeff. *"The Long, Dismal History of Software Project Failure"*[6]

Factors
For a long list, search on: software project failure reasons

Categories
As provided in the case study:
- Implementation
- Impact

However, there are numerous ways to categorize IT projects.

[6] http://www.codinghorror.com/blog/2006/05/the-long-dismal-history-of-software-project-failure.html

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Most important factor
In this author's opinion, the most important factor in software project failure is the lack of industry experience. IT managers with the most experience within the industry they support better understand the risks and are better able to communicate these risks to their management counterparts.

Student opinions can and should vary.

RWC 2: For Companies Both Big and Small

Case Study Questions

1. **In which ways do smartphones help these companies be more profitable? To what extent are improvements in performance coming from revenue increases or cost reductions? Provide several examples from the case.**

   Profitability:
   - Reduced time it takes to close a purchasing deal
   - Reduced inventory levels
   - Increased customer satisfaction
   - Increased employee satisfaction
   - Reduced service call time and costs

   Improvement source:
   Performance improvements primarily stem primarily from cost savings. However, we might also infer revenue increases from satisfied customers and fewer lost opportunities.

   Examples:
   Better communications enable improved field support with fewer personnel required to fix a problem and the reduced time it takes to close a service call

   Better communications reduced the time it takes to close procurement deals. This has resolved in lower inventory levels and reduced inventory holding costs. We could also infer that this results in fewer lost sales opportunities and better purchasing terms, too.

   Improved employee satisfaction – employees have access to the resources they need to do good work.

   Improved customer satisfaction – service calls are resolved more quickly thus reducing the impact on their business.

2. **The companies described in the case encountered a fair amount of resistance from employees when introducing smartphone technologies. Why do you think this happened? What could companies do to improve the reception of these initiatives? Develop two alternative propositions.**

   Employee resistance - CPS: management could not visualize the value these devices would provide.

   Employee resistance – Lloyd's Construction: employees were not technically savvy and required significant training. Though not directly mentioned, the case also implied that employees may have resisted these devices because they performed like workplace monitoring tools.

   Resistance causes – CPS: without first-hand experience or a clear vision, it's easy for management to discount the benefits and magnify the risks.

   Resistance causes – Lloyds Construction: the case does not explicitly state that Lloyd's employees likely have very low levels of formal education. However, students can reasonably infer this from their job titles. It's also against human nature to welcome new restrictions on one's freedom.

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Potential solutions: given the successes experienced by both CPS and Lloyd's Constructions, students should learn from their example:

- Implement small, low cost, low risk pilot projects to demonstrate the technology's value
- Provide a full range of employee training programs
- Employ a parallel implementation strategy to give employees time to learn the new systems while minimizing the impact of any failures

Other feasible recommendations:

- Adjust the employee evaluation system to include a section on technology use
- Adjust the compensation system so employees benefit from cost savings
- Provide "coaches" or "mentors" in addition to a help-desk during implementation
- Advertise/recognize early successes

3. CPS Energy and Lloyd's Construction used smartphones to make existing processes more efficient. How could they have used the technology to create new products and services for their customers? Include at least one recommendation for each organization.

The main point of this question is "how", but students may well focus on "what" instead. On the "how" side, both organizations may create new products by providing their customers with access to these systems. This access may take the form of "read" access. FedEx installed a "read" access system for its customers. This system allowed customers to track a package's delivery status. These organizations may also provide read/write access. Example applications might include order entry, account management, or even collaborative interaction.

CPS Energy might consider making its experts (or just their expertise) available online. This would enable their customers to attempt to solve their own problems or escalate a request to CPS' own experts. These experts could then access and assess the request's entire history. This may allow them to help solve the problem online or at least better prepare for the onsite service call.

Lloyd's work is done on a project by project basis. Lloyd's could use their systems to provide their general contractor (the contractor responsible for managing all the individual contractors) with project status information (site surveys, various permits, etc), schedule coordination, and expense reporting. These systems might also be used to demonstrate compliance with local and federal regulations such as hazmat handling or equal opportunity employment directives.

Real World Activities

1. In addition to the companies featured in the case, others like FedEx and UPS, which have large mobile workforces, heavily use mobile communication technologies. What other companies could benefit from these innovations?

Search Terms: "mobile workforce automation" + "case studies"

A few examples:

- Full service car rental agencies such as Alamo, Avis, Hertz, and National.
- Utility companies (meter readers)
- The trucking industry (any shipping and delivery company)
- The U.S. Census bureau
- Onsite market researchers
- Hospitals

2. Go online and research uses of smartphones in industries different from the ones reviewed here. Prepare a report to share your findings.

Search Terms: "mobile workforce automation" + "case studies"

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3. Use the Internet to research the latest technological developments in smartphones, and discuss how those could be used by companies to deliver value to customers and shareholders.

Search Terms: "smartphone" + "case studies".
Searching a news aggregator like Google News would provide the most current developments.[7]

Current developments include:

- Security and mobile banking
- Mobile journalism's impact
- Android O/S
- Competitor/product analysis

[7] For example http://news.google.com/

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