

Chapter Outline

- 2.1 Business Processes
- 2.2 Business process reengineering and business process management
- 2.3 Business Pressures, Organizational Responses, and Information Technology Support
- 2.4 Competitive Advantage and Strategic Information Systems
- 2.5 Business – Information Technology Alignment

Learning Objectives

1. Discuss ways in which information systems enable cross-functional business processes and business processes for a single functional area.
2. Become familiar with business process definition, measurement, and analysis.
3. Compare and contrast *business process improvement*, *business process reengineering*, and *business process management* to identify the advantages and disadvantages of each one.
4. Identify effective IT responses to different kinds of business pressures.
5. Describe the strategies that organizations typically adopt to counter Porter's five competitive forces.
6. Describe the characteristics of effective business–information technology alignment.

Teaching Tips and Strategies

In this chapter, the student is introduced to the basic concepts of information systems in the organization and how businesses use information systems in nearly every facet of their operations.

It is important for students to understand how information systems are critical to a business in obtaining and maintaining a competitive advantage. So it is also important for your students to make the connection between information systems and the success of a business. Making the point that businesses have failed when they do not keep up-to-date state-of-the-art information systems is usually something helps get the students' attention.

One way to explain this is to illustrate how universal Information Technology is in companies today. Explain to your students that they will probably work for a company that utilizes a variety of technologies at various levels of the organization. You might want to open your presentation for this chapter with a discussion about how information technology impacts many aspects of our life. Some examples are:

- ATM machines and banks in general.
- Grocery store checkout line cash registers with bar code scanners and the ability to use bankcards and credit cards for purchases.
- Educational institutions rely on IT. The registrar's office, financial aid office and the library are just a few examples.
- Smartphones, tables, and laptops.

You might explain to your students how the various areas of your University/College use information technology to perform their tasks. Develop examples of how the office that handles registration/grades is usually on a different network, because this helps limit the number of users that can modify grades or view students' records. A discussion could be introduced regarding computer labs and how and when they are used.

Discuss why by properly managing their data network the school saves money and has the ability to control what information or programs students and faculty members can access. Then explain how companies use access controls to manage information stored on their network. For example, in most organizations, each user has a pass code and linked to that pass code is a level of security clearance, which limits what information the employee can access. That access is based on a user's need, which ensures that they can accomplish the work that they need to complete, yet cannot access other parts of the system.

Many tasks that are performed by some employees are the same every week (such as recording hours worked for payroll) and that process can be automated including entering timesheets, calculating hours worked, etc. Discussing payroll related examples usually gets the students interested in information systems since it has a universal interest for all employees, whether they are an MIS major or not.

Unfortunately, in today's interconnected world we have access to so much information that it is often overwhelming for managers to know where the best data resides, and how to access it. With the advent of sophisticated computer systems, managers can now view a worker's Internet use by the click of a button. Managers can see what products are selling and what products are not. This information can be used to better help management run the day-to-day operations of a business.

This chapter is important in that it sets the foundation for the importance of information systems discussed through the rest of the book. Your students should begin to realize that this is important for them to understand and will use in their future careers. Your students need to understand that information technology not only change the way business is done, but it also helps the business share information and make better-educated decisions that will in turn help their business thrive in a competitive environment. The students should also be able to apply this knowledge to their specific major.

It is important for students to understand that there is a great need for managers to understand what is involved with IT because of the interdependence that exists between the business and technology used.

It is also important for you to emphasize that technology is slowly evolving into open systems. This means that industries now expect information technology solutions to be seamlessly interconnected and upgradeable. A good example of this the way the medical industry is having to automate their patient records.

Businesses that can upgrade their systems can save millions of dollars not just on equipment costs, but save money by not having to retrain customers or employees on new system interfaces when they are implemented.

This chapter should help your students to realize that when they or the business where the work is looking at adapting or changing technology they use, it is not as easy as just installing a piece of new hardware or a software program. They must consider and analyze future needs and make sure that the programs/technologies they are implementing will not only work today, but also be able to integrate with new technologies in the future.

Blackboard/CMS suggestions

I again suggest that if you are teaching an online class or are looking for a short video for a lecture class, I can usually find topic relevant videos at <http://youtube.com>. The problem is that sometimes they are product demos or sales videos, but they still usually present relevant information or concepts.

IT's About [small] Business - 2.1 Sharing Bicycles

1. *Describe the problems involved with setting up a bicycle-sharing program in a new city.*

Responses will vary, but may include issues such as finding locations to locate bike-stations, locating local repair shops, dealing with and recovering stolen bikes, etc..

2. *Describe how information technology can help address these problems.*

Bikes might be equipped with barcodes or RFID chips for check-in/out and tracking. Cellular tracking devices might also be built into the bikes.

IT's About Business (Chevron)

1. *What was one of the main advantages of BPR at Chevron?*

Chevron used a holistic approach to examine the interdependencies between processes executed in different business units. This ultimately improved the company's overall performance. In a 1996 report, Chevron claimed that the BPR project saved the company \$50 million.

2. *Why did Chevron adopt BPI?*

In 1995, Chevron was less than half of its current size today, producing roughly 1 million barrels of oil per day across six plants. The company was divided into three major departments: Refining, Marketing, and Supply and Distribution (S&D). Management decided that they needed to improve their supply chain to better integrate their multiple internal processes.

The company leadership decided the best strategy to dramatically improve performance of the company was to reengineer its end-to-end core processes, from the acquisition of crude oil crude through distribution of final products to Chevron customers.

3. *How does Chevron apply BPM in its operations today?*

Chevron's current BPM strategy is part of a larger companywide management system that focuses on operational excellence. The program requires all Chevron operating companies and business units to adopt a continuous improvement perspective, directed by guidelines, metrics, and targets that are reviewed and adapted every year. Apart from process efficiency, Chevron focuses on metrics related to safety, risk, and the environment. All employees participate in operational excellence activities, and managers receive specific operational excellence training to support the continuous improvement culture.

IT's About Business 2.3 "Bring Your Own Device" Can Cause Problems

1. *What are the advantages of allowing employees to use any mobile device to connect to the corporate network? The disadvantages?*

Advantages include the employees are able to use devices and applications that they like and are used to. Disadvantages include compatibility with company legacy systems and applications, difficulty in providing tech support across the board, data and access security, etc.

2. *Why is it necessary to be able to erase corporate data if a mobile device is lost or stolen?*

Company data located on some devices used by employees may contain proprietary information that may compromise the company's competitive advantage, contain trade secrets, or include employee data (or student data if from an educational institution) that could expose the company to legal action or the employee to identity theft.

IT's About Business 2.4 The Surui Tribe of the Amazon

1. *Describe the benefits that all of us gain from the Surui's use of IT.*

They were able to record and document stories from their tribal elders that document their tribe's traditions and history.

The tribe has also mounted an ambitious reforestation plan to combat the aggressive logging that is destroying the Surui's 600,000 acres of land. The tribe now uses smartphones to document cleared areas in the forest and to create planting strategies for new trees.

Google has also unveiled a cultural map of the Surui. This map serves as a digital tool to help the tribe share their vast knowledge of the rainforest while fighting illegal logging. The map, which is the result of a five-year partnership between Chief Almir and Google, is a collection of picture and videos mapping historical sites and offering three-dimensional visualization of Surui territory.

2. *Provide specific examples of how the Surui could make further use of IT to improve their lives.*

Student may suggest other things, but the tribe could record a photographic history of the tribe. They could sell/distribute, via the Internet, any unique products the tribe might make.

IT's About Business 2.5 Massachusetts Mutual Transforms Its Information Systems

1. *Explain why the MassMutual IT transformation project requires the right people, the right processes, and the right technology, in that particular order.*

The project required the right people, the right processes, and the right technology—in that order. The mandate was that the project was a business initiative, and anything it accomplished had to benefit the entire company, not just the IT group. To emphasize this point, the project included MassMutual business units as partners.

In the project's first phase, the IT organization conducted a comprehensive assessment of itself against its peers in the insurance industry and against best-in-class organization. As a result of this assessment, MassMutual redefined every job in the IT organization, and it reduced more than 100 existing job descriptions to 35 industry-standard roles.

2. *Describe the benefits of the knowledge management system implemented at MassMutual.*

MassMutual's IT organization has made significant improvements. For instance, it had achieved an 18 percent reduction in IT costs and a 9 percent improvement in the ability to deliver projects on time and within budget, while giving internal customers (other MassMutual employees) exactly what they require. The IT department had also achieved a 10 percent reduction in legacy applications. For the company's core Universal Life Products, IT was able to reduce the product development life cycle by 9 months while reducing costs by an impressive 84 percent.

3. Why are people from the business units included in IT Communities of Practice?

As part of their standardization process, IT created “Communities of Practice.” These are teams that share stories and ideas and determine whether the existing processes are working. If they are not, then the teams devise strategies to improve them. The teams also institutionalize those processes that are working effectively. All Communities of Practice include people from the company’s business units.

4. *What should MassMutual’s IT organization do next?*

Students will have different ideas and opinions as to what MassMutual should do next.

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| Review Questions - <i>Before You Go On...</i> |
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Section 2.1 ...

1. *What is a business process?*

A **business process** is an ongoing collection of related activities that create a product or a service of value to the organization, its business partners, and/or its customers. A process has inputs and outputs, and its activities can be measured. Many processes cross functional areas in an organization. For example, product development involves research, design, engineering, manufacturing, marketing, and distribution.

2. *Describe several business processes carried out at your university.*

These include Accounts receivable (tuition), registration, payroll, human resources, etc...

3. *Define a cross-functional business process, and provide several examples of such processes.*

This is a process in which no single functional area is responsible for its completion; multiple functional areas collaborate to perform the function.

4. *Pick one of the processes described in questions 2 or 3 given above, identify its inputs, outputs customer(s), and resources. How does the process create value for its customers?*

Students will contribute responses depending on the process they choose.

Section 2.2 ...

1. *What is business process reengineering?*

A strategy for improving the efficiency and effectiveness of an organization’s business processes. The key to BPR is for enterprises to examine their business processes from a “clean sheet” perspective and then determine how they can best reconstruct those processes to improve their business functions.

2. *What is business process improvement?*

Business Process Improvement is a less radical, less disruptive, and more incremental approach to business process reengineering..

3. *What is business process management?*

BPM is a management technique that includes methods and tools to support the design, analysis, implementation, management, and optimization of business processes.

Section 2.3

1. *What are the characteristics of the modern business environment?*

It is a combination of social, legal, economic, physical, and political factors in which businesses conduct their operations

2. *Discuss some of the pressures that characterize the modern global business environment.*

Market pressures are generated by the global economy, intense competition, the changing nature of the workforce, and powerful customers.

3. *Identify some of the organizational responses to these pressures. Are any of these responses specific to a particular pressure? If so, which ones?*

Organizations are responding to the various pressures by implementing IT such as strategic systems, customer focus, make-to-order and mass customization, and e-business.

Section 2.4

1. *What are strategic information systems?*

Any information system which helps an organization gain a competitive advantage or reduce a competitive disadvantage is a strategic information system.

2. *According to Porter, what are the five forces that could endanger a firm's position in its industry or marketplaces?*

- The threat of entry of new competitors.
- The bargaining power of suppliers
- The bargaining power of customers
- The threat of substitute products or services
- The rivalry among existing firms in the industry

3. *Describe Porter's value chain model. Differentiate between Porter's competitive forces model and his value chain model.*

Porter's competitive forces model is focused on analyzing the company's external environment and how competitive the industry is. The value chain model is focused on the internal operations of the company and is a model to allow the firm to analyze its own processes.

4. *What strategies can companies use to gain competitive advantage?*

- Cost leadership

- Differentiation
- Innovation
- Operational effectiveness

Section 2.5 ...

1. What is business – IT alignment?

Business-IT alignment is the tight integration of the IT function with the strategy, mission, and goals of the organization. That is, the IT function directly supports the business objectives of the organization

2. Give examples of business – IT alignment at your university, regarding student systems. (Hint: What are the “business” goals of your university with regard to student registration, fee payment, grade posting, etc.?)

Responses will depend on the amount of IT support provided at your school. Hopefully that support is high and link to the overall business strategy of the institution.

Discussion Questions

1. Consider the student registration business process at your university:

- Describe the steps necessary for you to register for your classes each semester. Who are the customers of the process? What inputs and outputs does the process have? What organizational resources are used in the process?
- Describe how information technology is used in each step of the process (or is not used). Evaluate the process performance. Is it efficient? Is it effective? Why or why not?

The responses to this question will be different depending on your school's processes.

2. Explain how an organization may choose between applying business process improvement versus business process reengineering to solving a process performance problem.

Although some enterprises have successfully implemented BPR, some organizations have found this strategy too difficult, too radical, too lengthy, and, in some cases, too comprehensive. The impact on employees, on facilities, on existing investments in information systems, and even on organizational culture was overwhelming. Despite the many failures in BPR implementation, however, businesses increasingly began to organize work around business processes rather than individual tasks. The result was a less radical, less disruptive, and more incremental approach, called business process improvement (BPI).

3. Why is it so difficult for an organization to actually implement business process reengineering?

There are various internal and external factors that make it difficult to do BPR. These include technical limitations, cost factors, management support, legal and political issues, etc.

4. How can an organization benefit from BPM?

Business process management (BPM), a management system that includes methods and tools to support the design, analysis, implementation, management, and continuous optimization of core business processes throughout the organization. BPM integrates disparate Business Process Improvement initiatives to ensure consistent strategy execution.

5. *Is IT necessary for BPM? Why or why not?*

Students may have different opinions, however they need to understand that in almost every case IT has some impact on BPM.

6. *Explain why IT is both a business pressure and an enabler of response activities that counter business pressures.*

Rapid changes in information technology and capabilities force business to adapt or go out of business. On the other hand, IT assists companies in their efforts to stay up on the latest strategies to provide the best customer service, to provide better quality products, new and different delivery methods..

7. *What does a flat world mean to you in your choice of a major? In your choice of a career? Will you have to be a “lifelong learner”? Why or why not?*

It means that you need to think about who across the world you might be competing against. You not only will have to think about those in your immediate vicinity, but due to the far reaching impact of the new global, Web-based platform which will continue to grow, you will be competing with anyone who has access to a cell phone or a computer.

You clearly will be a lifelong learner since there will be new devices, new applications and new ways in which they are used. Anyone who stops learning will be left behind very quickly..

8. *What might the impact of a flat world be on your standard of living?*

Resources that were previously very expensive or unattainable will become increasingly more available. Your ability to find inexpensive travel options are a good example.

9. *Is IT a strategic weapon or a survival tool? Discuss.*

It is both. Used to establish a competitive advantage in an industry, IT helps an organization implement its strategic goals and increase its performance and productivity. As a survival tool, it is used to fend off various threats such as new entrants, suppliers and customers bargaining power, substitute products or services, and rivalries among existing firms in the industry.

10. *Why might it be difficult to justify a strategic information system?*

SISs are often very complex and very expensive to develop and outcomes may take years to observe and measure.

11. *Describe the five forces in Porter’s competitive forces model, and explain how the Internet has affected each one.*

- The threat of entry of new competitors.
In the CarMax case we saw how the use of communications and the Internet allow

- a company to gain an advantage by providing access to its inventory.
- The bargaining power of suppliers
Companies can find potential suppliers and compare prices giving buyers a better chance to negotiate terms.
- The bargaining power of customers
Customers' power has increased tremendously with the availability of information on the Internet. Much the same as suppliers above, they have a much more information about sources of goods and services and pricing to help them when they are making purchasing decisions. (The demon customer case drives this point home)
- The threat of substitute products or services
Any industry which is primarily based on digitized information is at risk, and must take the threat of Internet delivered products and services seriously.
- The rivalry among existing firms in the industry
The Internet makes competition more intense.
Keeping anything secret is impossible once it is available on the Internet. Competitors can see the systems and match their features to remain competitive.

12. *Describe Porter's value chain model. What is the relationship between the competitive forces model and the value chain model?*

The competitive forces model is useful for identifying general strategies, organizations use the value chain model to identify specific activities where they can use competitive strategies for greatest impact.

13. *Describe how IT can be used to support different value chains for different companies?*

A value chain is a sequence of activities through which the organization's inputs, whatever they are, are transformed into more valuable outputs, whatever they are. So, based on this definition, IT can support the HR/Payroll, Accounting, Purchasing, etc. for different value chains.

Nearly every company has to have an IT operation that performs these functions (HR/Payroll, Accounting, etc) even though they have different value chains.

14. *Discuss the idea that an information system by itself can rarely provide a sustainable competitive advantage.*

Information Technology is a tool. It is management's responsibility to use it to the best advantage that will help to sustain a competitive advantage.

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| Problem Solving Activities |
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1. *Surf the Internet for information about the Department of Homeland Security. Examine the available information, and comment on the role of information technologies in the department.*

Have the students report what they found.

2. *Compare and contrast the shopping process at a bricks and mortar store such as Macy's or Target and at an Internet retailer such as Amazon.com. How are these processes different? (Hint: Consider the process steps, the inputs, outputs, resources, and customers.) Are there differences in the performance (effectiveness and efficiency) of the two processes? Which process is superior, and why?*

As your students if any of them use any of the retailers listed in this question. Then ask for their opinions on the actual experiences shopping at each. Have them compare and contrast each and chart this on the board.

3. *Experience customization by designing your own shoes at www.nike.com, your car at www.jaguar.com, your CD at www.easternrecording.com, your business card at www.iprint.com, and your diamond ring at www.bluenile.com. Summarize your experiences.*

Before starting this activity, you might consider asking the students if any have already used any of these sites and discuss their experiences.

4. *Access www.go4customer.com. What does this company do and where is it located? Who are its customers? Which of Friedman's flatteners does this company fit? Provide examples of how a U.S. company would use its services.*

The company operates call centers located in India. They do everything from market surveys and debt collections, to inbound call center operations. Using Friedman's model, they would be a global company handling outsourced services. A US company could use them for a number of things, including operating their customer call center, telephone marketing, and market surveys.

5. *Enter Wal-Mart China (www.wal-martchina.com/english/index.htm). How does Wal-Mart China differ from your local Wal-Mart (consider products, prices, services, etc.)? Describe these differences.*

This site is more of a corporate information site than a marketing site. No products listed for sale, however there is some information about a few product lines.

6. *Apply Porter's value chain model to Costco (www.costco.com). What is Costco's competitive strategy? Who are Costco's major competitors? Describe Costco's business model. Describe the tasks that Costco must accomplish for each primary value chain activity. How would Costco's information systems contribute to Costco's competitive strategy, given the nature of its business?*

Costco's business model is to sell premium merchandise at a lower price to members (captive group of shoppers). Sam's club is their biggest competitor. They need to procure the right merchandise mix targeting their members by building a strong understanding of their base of members. They need to have an efficient supply chain and then be able to track the success of their promotions and marketing efforts.

7. *Apply Porter's value chain model to Dell (www.dell.com). What is Dell's competitive strategy? Who are Dell's major competitors? Describe Dell's business model. Describe the tasks that Dell must accomplish for each primary value chain activity. How would Dell's information systems contribute to Dell's competitive strategy, given the nature of its business?*

Dell's strategy is to offer high-end computers with premium features and components at a lower price and allow for customers to customize their systems using a web-based interface. Dell must support a highly efficient supply chain system and reduce their inventory costs. They need to track new components and offer them to their customers and then track the quality of their components as they are introduced into their systems.

8. *The market for optical copiers is shrinking rapidly. It is expected that by 2010 as much as 90 percent of all duplicated documents will be done on computer printers. Can a company such as Xerox Corporation survive?*

Read about the problems and solutions of Xerox from 2000-2010 at www.fortune.com, www.findarticles.com, and www.google.com.

Identify all the business pressures on Xerox.

Find some of Xerox's response strategies (see www.xerox.com, www.yahoo.com, and www.google.com).

Identify the role of IT as a contributor to the business technology pressures (for example, obsolescence).

Identify the role of IT as a facilitator of Xerox's critical response activities.

Xerox needs to identify new business models and new ways to introduce their technology into products that can support their customers.

Team Assignments

1. *As a class, describe the business pressures on your university. Each group will then create an online group for studying one of these business pressures, and how your university uses IT to respond to this pressure. Each member of the group must have a Yahoo! e-mail account (free). Form your groups in Google Groups (<http://groups.google.com>).*

Responses will vary from the students.

2. *Divide the class into teams. Each team will select a country government and visit its official Web site (for example, try the United States, Australia, New Zealand, Singapore, Norway, Canada, the United Kingdom, the Netherlands, Denmark, Germany, and France). For example, the official Web portal for the U.S. government is www.firstgov.gov. Review and compare the services offered by each country. How does the United States stack up? Are you surprised at the number of services offered by countries through Web sites? Which country offers the most services? The least?*

Responses will vary from your students.

Closing Case: IBM's Watson

1. What applications can you think of for Watson in a university setting?

Class scheduling based on projected course needs and demands by students.

Class time scheduling to avoid scheduling conflicts.

Classroom scheduling based on needs of the class and instructor.

You and your students will be able to come up with many more.

2. What are potential disadvantages of using Watson in healthcare settings?

Much depends on patients fully recording symptoms and medical professionals recording all diagnostic test that has been done on the patient. Keep in mind that some medical symptoms may mask multiple issues.

Page 12 of Chapter 2: Organizational Strategy, Competitive Advantage, and Information Systems
(5th Edition of Introduction to Information Systems)

However, as a Watson-type system collects more data from multiple patients over time Watson's reliability will increase.

3. Would you consider being diagnosed only by Watson? Why or why not?

Your student will have different opinions on this.

4. Would you consider being diagnosed by your personal physician, if he or she consulted Watson? Why or why not?

Your student will have different opinions on this.