Achieving Competitive Advantage with Information Systems

STUDENT LEARNING OBJECTIVES

After completing this chapter, you will be able to answer the following questions:

1. How does Porter’s competitive forces model help companies develop competitive strategies using information systems?
2. How do the value chain and value web models help businesses identify opportunities for strategic information system applications?
3. How do information systems help businesses use synergies, core competencies, and network-based strategies to achieve competitive advantage?
4. How do competing on a global scale and promoting quality enhance competitive advantage?
5. What is the role of business process management (BPM) in enhancing competitiveness?
VERIZON, AT&T, AND SKYPE: WHICH DIGITAL STRATEGY WILL PREVAIL?

Verizon and AT&T are the two largest telecommunications companies in the United States. In addition to voice communication, customers use their networks to surf the Internet; send e-mail, text, and video messages; share photos; watch videos and high-definition TV; and conduct videoconferences around the globe. All of these products and services are digital.

Competition in this industry is exceptionally intense and fast-changing. Both companies have tried to prevail by refining their wireless, landline, and high-speed Internet networks and expanding the range of products, applications, and services available to customers. Wireless services are the most profitable, and smartphone customers are the most desirable of all because they typically pay higher monthly rates for wireless data service plans. (Each iPhone owner pays an average of more than $90 per month to AT&T.)

For a number of years, Verizon tried to blunt competition by making heavy technology investments in both its landline and wireless networks. Its wireless network was considered the most far-reaching and reliable in the United States. AT&T took a different path, partnering with other companies to capitalize on their
technology innovations. The company contracted with Apple Computer to be the exclusive network for its iPhone. The iPhone’s streamlined design, touch screen, exclusive access to the Apple iTunes music service, and 500,000 downloadable applications made it an instant hit. Since its debut in 2007, the iPhone was AT&T’s primary growth engine.

Now that’s all changing. In February 2011, Verizon was allowed to sell a version of the Apple iPhone that worked on its wireless network. Verizon further hedged its bets by offering leading-edge smartphones based on Google’s highly-popular Android operating system. AT&T countered in March 2011 by announcing its intention to buy T-Mobile USA, a deal that would make it the largest wireless carrier in the United States. The newly combined company, combining AT&T’s 95.5 million wireless subscribers with T-Mobile’s 33.7 million subscribers, would account for 42 percent of all US wireless subscribers. (Verizon has roughly 31 percent.)

And it looks like the competitive balance is about to shift again. In May 2011, Microsoft acquired Skype, a service that allows users to make voice and video calls over the Internet for free or for a very low cost. Skype’s smartphone app allows mobile users to avoid paying higher fees to wireless carriers. Microsoft will be able to incorporate Skype into its other products, such as its Office productivity programs, Xbox video game system, and Windows Phone 7 mobile operating system, enabling its users to be seamlessly connected at work and at home.

Industry analysts predict that the majority of consumers will eventually move from landline telephones or from paying for mobile phone calls by the minute, to communicating over the Internet using services like Skype. People won’t need to spend so much on mobile phones or land lines to make video calls. This will eat into the profits of Verizon and AT&T, which have been able to charge premium rates for their digital communication services.


The story of Verizon, AT&T, and Skype illustrates some of the ways that information systems help businesses compete—and also the challenges of sustaining a competitive advantage. The telecommunications industry in which these companies operate is extremely crowded and competitive, with telecommunications companies vying with cable companies, upstarts such as Skype, and each other to provide a wide array of digital services as well as voice transmission. To meet the challenges of surviving and prospering in this environment, Verizon and AT&T focused on different competitive strategies using information technology.

The chapter-opening diagram calls attention to important points raised by this case and this chapter. Both companies identified opportunities to use information technology to offer new products and services. AT&T offered enhanced wireless services for the iPhone, while Verizon initially focused on high-capacity, high-quality network services. AT&T’s strategy initially emphasized keeping costs low while capitalizing on innovations from other technology vendors. Verizon’s strategy involved high up-front costs to build a high-capacity network infrastructure, and it also focused on providing a high level of network reliability and customer service.

This case study clearly shows how difficult it is to sustain a competitive advantage. Exclusive rights to use the highly popular iPhone on its network brought AT&T millions of new customers and enhanced its competitive position. But this competitive advantage has diminished now that Verizon offers a version of the iPhone as well as popular Android smartphones. Acquiring T-Mobile would enable AT&T to shift its strategy to emphasize network heft and breadth of coverage. Competition from Skype, which will affect wireless service pricing, may also tilt the competitive balance among the various wireless carriers.
3.1 Using Information Systems to Achieve Competitive Advantage

In almost every industry you examine, you will find that some firms do better than most others. There’s almost always a standout firm. In the automotive industry, Toyota is considered a superior performer. In pure online retail, Amazon is the leader; in offline retail Walmart, the largest retailer on earth, is the leader. In online music, Apple’s iTunes is considered the leader with more than 75 percent of the downloaded music market, and in the related industry of digital music players, the iPod is the leader. In Web search, Google is considered the leader.

Firms that “do better” than others are said to have a competitive advantage over others: They either have access to special resources that others do not, or they are able to use commonly available resources more efficiently—usually because of superior knowledge and information assets. In any event, they do better in terms of revenue growth, profitability, or productivity growth (efficiency), all of which ultimately in the long run translate into higher stock market valuations than their competitors.

But why do some firms do better than others and how do they achieve competitive advantage? How can you analyze a business and identify its strategic advantages? How can you develop a strategic advantage for your own business? And how do information systems contribute to strategic advantages? One answer to these questions is Michael Porter’s competitive forces model.

PORTER’S COMPETITIVE FORCES MODEL

Arguably, the most widely used model for understanding competitive advantage is Michael Porter’s competitive forces model (see Figure 3.1). This model provides a general view of the firm, its competitors, and the firm’s environment. Recall in Chapter 2 we described the importance of a firm’s environment and the dependence of firms on environments. Porter’s model is all about the firm’s general business environment. In this model, five competitive forces shape the fate of the firm.
Traditional Competitors
All firms share market space with other competitors who are continuously devising new, more efficient ways to produce by introducing new products and services, and attempting to attract customers by developing their brands and imposing switching costs on their customers.

New Market Entrants
In a free economy with mobile labor and financial resources, new companies are always entering the marketplace. In some industries, there are very low barriers to entry, whereas in other industries, entry is very difficult. For instance, it is fairly easy to start a pizza business or just about any small retail business, but it is much more expensive and difficult to enter the computer chip business, which has very high capital costs and requires significant expertise and knowledge that is hard to obtain. New companies have several possible advantages: They are not locked into old plants and equipment, they often hire younger workers who are less expensive and perhaps more innovative, they are not encumbered by old worn-out brand names, and they are “more hungry” (more highly motivated) than traditional occupants of an industry. These advantages are also their weakness: They depend on outside financing for new plants and equipment, which can be expensive; they have a less-experienced workforce; and they have little brand recognition.

Substitute Products and Services
In just about every industry, there are substitutes that your customers might use if your prices become too high. New technologies create new substitutes all the time. Even oil has substitutes: Ethanol can substitute for gasoline in cars; vegetable oil for diesel fuel in trucks; and wind, solar, coal, and hydro power for industrial electricity generation. Likewise, Internet telephone service can substitute for traditional telephone service, and fiber-optic telephone lines to the home can substitute for cable TV lines. And, of course, an Internet music service that allows you to download music tracks to an iPod is a substitute for CD-based music stores. The more substitute products and services in your industry, the less you can control pricing and the lower your profit margins.

Customers
A profitable company depends in large measure on its ability to attract and retain customers (while denying them to competitors), and charge high prices. The power of customers grows if they can easily switch to a competitor’s products and services, or if they can force a business and its competitors to compete on price alone in a transparent marketplace where there is
little product differentiation, and all prices are known instantly (such as on the Internet). For instance, in the used college textbook market on the Internet, students (customers) can find multiple suppliers of just about any current college textbook. In this case, online customers have extraordinary power over used-book firms.

**Suppliers**

The market power of suppliers can have a significant impact on firm profits, especially when the firm cannot raise prices as fast as suppliers can. The more suppliers a firm has, the greater control it can exercise over those suppliers in terms of price, quality, and delivery schedules. For instance, manufacturers of laptop PCs almost always have multiple competing suppliers of key components, such as keyboards, hard drives, and display screens.

**INFORMATION SYSTEM STRATEGIES FOR DEALING WITH COMPETITIVE FORCES**

What is a firm to do when faced with all these competitive forces? And how can the firm use information systems to counteract some of these forces? How do you prevent substitutes and inhibit new market entrants? How do you become the most successful firm in an industry in terms of profit and share price (two measures of success)?

**Basic Strategy 101: Align the IT with the Business Objectives**

The basic principle of IT strategy for a business is to ensure the technology serves the business, and not the other way around. The research on IT and business performance has found that (a) the more successfully a firm can align its IT with its business goals, the more profitable it will be, and (b) only about one-quarter of firms achieve alignment of IT with business. About half of a business firm’s profits can be explained by alignment of IT with business (Luftman, 2003; Henderson, et al., 1996).

Most businesses get it wrong: IT takes on a life of its own and does not serve management and shareholder interests very well. Instead of business people taking an active role in shaping IT to the enterprise, they ignore it, claim to not understand IT, and tolerate failure in the IT area as just a nuisance to work around. Such firms pay a hefty price in poor performance. Successful firms and managers understand what IT can do and how it works, take an active role in shaping its use, and measure its impact on revenues and profits.

So how do you as a manager achieve this alignment of IT with business? In the following sections, we discuss some basic ways to do this, but here’s a summary:

- Identify your business strategy and goals.
- Break these strategic goals down into concrete activities and processes.
- Identify how you will measure progress towards the business goals (e.g. metrics).
- Ask yourself “How can information technology help me achieve progress towards our business goals and how it will improve our business processes and activities?”
- Measure actual performance. Let the numbers speak.

Let’s see how this works out in practice. There are four generic strategies, each of which often is enabled by using information technology and systems: low-cost leadership, product differentiation, focus on market niche, and strengthening customer and supplier intimacy.

**Low-Cost Leadership**

Use information systems to achieve the lowest operational costs and the lowest prices. The classic example is Walmart. By keeping prices low and shelves well stocked using a legendary inventory replenishment system, Walmart became the leading retail business in the United States. Walmart’s continuous replenishment system sends orders for new merchandise directly to suppliers as soon as consumers pay for their purchases at the cash register. Point-of-sale terminals record the bar code of each item passing the checkout counter and send a purchase transaction directly to a central computer at Walmart headquarters. The computer
Supermarkets and large retail stores such as Walmart use sales data captured at the checkout counter to determine which items have sold and need to be reordered. Walmart’s continuous replenishment system transmits orders to restock directly to its suppliers. The system enables Walmart to keep costs low while fine-tuning its merchandise to meet customer demands.

collects the orders from all Walmart stores and transmits them to suppliers. Suppliers can also access Walmart’s sales and inventory data using Web technology.

Because the system replenishes inventory with lightning speed, Walmart does not need to spend much money on maintaining large inventories of goods in its own warehouses. The system also enables Walmart to adjust purchases of store items to meet customer demands. Competitors, such as Sears, have been spending 24.9 percent of sales on overhead. By using systems to keep operating costs low, Walmart pays only 16.6 percent of sales revenue for overhead. (Operating costs average 20.7 percent of sales in the retail industry.)

Walmart’s continuous replenishment system is also an example of an efficient customer response system. An efficient customer response system directly links consumer behavior to distribution and production and supply chains. Walmart’s continuous replenishment system provides such an efficient customer response. Dell Computer Corporation’s assemble-to-order system, described in the following discussion, is another example of an efficient customer response system.

**Product Differentiation**

Use information systems to enable new products and services, or greatly change the customer convenience in using your existing products and services. For instance, Google continuously introduces new and unique search services on its Web site, such as Google Maps. Apple created iPod, a unique portable digital music player, plus a unique online Web music service where songs can be purchased for $.69 to $1.29 each. Apple has continued to innovate with its multimedia iPhone, iPad tablet computer, and iPod video player.

Manufacturers and retailers are using information systems to create products and services that are customized and personalized to fit the precise specifications of individual customers. For example, Nike sells customized sneakers through its Nike iD program on its Web site. Customers are able to select the type of shoe, colors, material, outsoles, and even a logo of up to eight characters. Nike transmits the orders via computers to specially-equipped plants in China and Korea. The sneakers cost only $10 extra and take about three weeks to reach the customer. This ability to offer individually tailored...
products or services using the same production resources as mass production is called mass customization.

Table 3.1 lists a number of companies that have developed IS-based products and services that other firms have found difficult to copy.

**Focus on Market Niche**
Use information systems to enable a specific market focus, and serve this narrow target market better than competitors. Information systems support this strategy by producing and analyzing data for finely tuned sales and marketing techniques. Information systems enable companies to analyze customer buying patterns, tastes, and preferences closely so that they efficiently pitch advertising and marketing campaigns to smaller and smaller target markets.

The data come from a range of sources—credit card transactions, demographic data, purchase data from checkout counter scanners at supermarkets and retail stores, and data collected when people access and interact with Web sites. Sophisticated software tools find patterns in these large pools of data and infer rules from them that can be used to guide decision making. Analysis of such data drives one-to-one marketing where personal messages can be created based on individualized preferences. For example, Hilton Hotels’ OnQ system analyzes detailed data collected on active guests in all of its properties to determine the preferences of each guest and each guest’s profitability. Hilton uses this information to give its most profitable customers additional privileges, such as late checkouts. Contemporary customer relationship management (CRM) systems feature analytical capabilities for this type of intensive data analysis (see Chapters 2 and 8).

**Strengthen Customer and Supplier Intimacy**
Use information systems to tighten linkages with suppliers and develop intimacy with customers. Toyota, Ford, and other automobile manufacturers have information systems that give their suppliers direct access to their production schedules, enabling suppliers to decide how and when to ship supplies to the plants where cars are assembled. This allows suppliers more lead time in producing goods. On the customer side, Amazon.com keeps track of user preferences for book and CD purchases, and can recommend titles purchased by others to its customers. Strong linkages to customers and suppliers increase switching costs (the cost of switching from one product or service to competitor) and loyalty to your firm.

Table 3.2 summarizes the competitive strategies we have just described. Some companies focus on one of these strategies, but you will often see firms pursuing several of them simultaneously. Starbucks, discussed in the Interactive Session on Technology, is an example.

<table>
<thead>
<tr>
<th>IS-Enabled New Products and Services Providing Competitive Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amazon: One-click shopping</strong></td>
</tr>
<tr>
<td><strong>Online music: Apple iPod and iTunes</strong></td>
</tr>
<tr>
<td><strong>Golf club customization: Ping</strong></td>
</tr>
<tr>
<td><strong>Online person-to-person payment: PayPal.com</strong></td>
</tr>
</tbody>
</table>

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*TABLE 3.1*

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*Chapter 3: Achieving Competitive Advantage with Information Systems*

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INTERACTIVE SESSION: TECHNOLOGY

Technology Helps Starbucks Find New Ways to Compete

Starbucks is the world’s largest specialty coffee retailer, with more than 16,850 coffee shops in about 40 countries. For years, Starbucks has continued to grow throughout the United States and internationally, opening franchises at an impressive rate. From 2002 to 2007 alone, the company tripled the number of stores it operated worldwide. Starbucks offers a unique experience: high-end specialty coffees and beverages, friendly and knowledgeable servers, and customer-friendly coffee shops. This was a winning formula for many years and enabled Starbucks to charge premium prices.

During the economic downturn beginning in 2008 profits plunged. Customers complained that the company had lost its hip, local feel and had become more like a fast-food chain. Many coffee drinkers went in search of cheaper alternatives from McDonald’s and Dunkin’ Donuts for their coffee fixes. Starbucks stock lost over 50 percent by the end of 2008. Major changes were in order.

Starbucks used the opportunity to overhaul its business using several different strategies simultaneously. First, the company has revamped its in-store technology and sought to integrate its business processes with wireless technology and the mobile digital platform. Also, rather than copy the practices of competitors, Starbucks pursued a more aggressive product differentiation strategy, intended to emphasize the high quality of its beverages and efficient and helpful customer service. At the same time, however, Starbucks also focused on becoming ‘lean’, like many of its competitors, eliminating inefficiency wherever possible.

When Starbucks set out to improve its customer experience, it found that more than a third of its customers are active users of smartphones. The company set out to implement several features and improvements that would appeal to this segment of its customer base. First, Starbucks implemented a technology that allows customers to pay using a smartphone app. The app is integrated with the Starbucks Card system, which allows regular customers to pay with a pre-paid and rechargeable card at any Starbucks branch. When customers make a purchase using the app, a cashier scans a bar code displayed on the phone, and the resulting sale is charged to the customer’s Starbucks Card account. Customers report that paying using this app, available for all major smartphone operating systems, is much faster than traditional forms of payment.

Many of Starbucks’ most loyal customers regularly spend time using the free Wi-Fi wireless network offered in each store. A majority of these customers also use mobile devices to connect to the in-store Wi-Fi networks. Recognizing this, Starbucks launched what it calls the “Starbucks Digital Network”, a portal designed specifically for mobile devices as opposed to traditional Web browsers. The site is optimized for all major smartphone operating systems (iOS, Android, and Blackberry), and responds to the multi-touch capability of devices like the iPad.

The Starbucks Digital Network site was developed in partnership with Yahoo and functions as a content portal. Starbucks customers using the site will receive free Wall Street Journal access, select free iTunes downloads, and a wide variety of other content. The site will integrate with Foursquare, a location-based social networking site for mobile devices. This arrangement will allow users to check in and receive award points using Starbucks’ site. Because Starbucks has the most Foursquare check-ins of any company to date, this feature has been popular with customers.

Rather than serve ads on the site, Starbucks has opted to offer the site free of advertising, hoping that striking deals with content providers will make it a profitable venture. Even if the Starbucks Digital Network is not highly profitable, analysts suggest that the site is an effective way for Starbucks to improve its relationship with its most valuable customers and a creative use of the mobile digital platform to enhance customer satisfaction.

In addition to revamping their business to better serve the needs of their mobile users, Starbucks has made a concerted effort to become more efficient, reduce waste, and use the time saved to provide better customer service. Starbucks set out to streamline the business processes used in each of its stores so that baristas do not need to bend down to scoop coffee, cutting down on idle time while waiting for coffee to drain, and finding ways to reduce the amount of time each employee spends making a drink. Starbucks created a 10-person “lean team” whose job is to travel the country visiting franchises and coaching them in lean techniques made famous by automaker Toyota’s production system.

Store labor costs Starbucks about $2.5 billion, amounting to 24 percent of its annual revenue. If Starbucks is able to reduce the time each employee spends making a drink, the company can make more drinks with the same number of workers or with fewer workers. Alternatively, Starbucks could use this time savings to give baristas more time to interact with customers and hopefully improve the Starbucks experience.
Wireless technology enhanced Starbucks’ business process simplification effort. Starbucks district managers use the in-store wireless networks to run store operations and to connect to the company’s private corporate network and systems. Starbucks district managers were equipped with Wi-Fi enabled laptops for this purpose. Before the in-store wireless networks were implemented, a district manager who oversaw 10 stores had to visit each store, review its operations, develop a list of items on which to follow up, and then drive to a Starbucks regional office to file reports and send e-mail. Instead of running the business from cubicles in regional headquarters, Starbucks district managers can do most of their work sitting at a table in one of the stores they oversee. The time saved from going back and forth to regional offices can be used to observe how employees are serving customers and improve their training. Implementing Wi-Fi technology enabled Starbucks to increase the in-store presence of district managers by 25 percent without adding any extra managers.

Dating to 2008, the weakened economy forced Starbucks to close 900 stores, renegotiate some rents, cut prices on some of their big ticket items, and begin offering price-reduced specials, such as a breakfast sandwich and a drink for $3.95. Cost reductions from procedural changes made it possible for Starbucks to offer these lower prices.

Major fast-food chains already used these techniques. While some baristas have resisted the changes, and analysts were skeptical that the changes would take hold, Starbucks attributes much of its recent uptick in profits to its efforts to go lean. Starbucks CEO Howard Schultz said that “the majority of cost reductions we’ve achieved come from a new way of operating and serving our customers”, and also added that the time and money saved was also allowing the company to improve its customer engagement. By 2011, Starbucks had returned to profitability and continuing growth, with plans to open 500 new stores, in large part because of the success of each these changes.


## CASE STUDY QUESTIONS

1. Analyze Starbucks using the competitive forces and value chain models.
2. What is Starbucks’ business strategy? Assess the role played by technology in this business strategy.
3. How much has technology helped Starbucks compete? Explain your answer.

## MIS IN ACTION

Visit Starbucks’ Web site, then answer the following questions:

1. What functions are provided by the Web site?
2. How does the Web site support Starbucks’ business strategy?

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost leadership</td>
<td>Use information systems to produce products and services at a lower price than competitors while enhancing quality and level of service</td>
<td>Walmart</td>
</tr>
<tr>
<td>Product differentiation</td>
<td>Use information systems to differentiate products, and enable new services and products</td>
<td>Google, eBay, Apple, Starbucks</td>
</tr>
<tr>
<td>Focus on market niche</td>
<td>Use information systems to enable a focused strategy on a single market niche; specialize</td>
<td>Hilton Hotels, Harrah’s</td>
</tr>
<tr>
<td>Customer and supplier intimacy</td>
<td>Use information systems to develop strong ties and loyalty with customers and suppliers</td>
<td>Toyota Corporation, Amazon</td>
</tr>
</tbody>
</table>

## TABLE 3.2

<table>
<thead>
<tr>
<th>Four Basic Competitive Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walmart</td>
</tr>
<tr>
<td>Google, eBay, Apple, Starbucks</td>
</tr>
<tr>
<td>Hilton Hotels, Harrah’s</td>
</tr>
<tr>
<td>Toyota Corporation, Amazon</td>
</tr>
</tbody>
</table>

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Implementing any of these strategies is no simple matter. But it is possible, as evidenced by the many firms that obviously dominate their markets and that have used information systems to enable their strategies. As shown by the cases throughout this book, successfully using information systems to achieve a competitive advantage requires a precise coordination of technology, organizations, and people. Indeed, as many have noted with regard to Walmart, Apple, and Amazon, the ability to successfully implement information systems is not equally distributed, and some firms are much better at it than others.

**THE INTERNET’S IMPACT ON COMPETITIVE ADVANTAGE**

Because of the Internet, the traditional competitive forces are still at work, but competitive rivalry has become much more intense (Porter, 2001). Internet technology is based on universal standards that any company can use, making it easy for rivals to compete on price alone and for new competitors to enter the market. Because information is available to everyone, the Internet raises the bargaining power of customers, who can quickly find the lowest-cost provider on the Web. Profits have been dampened. Table 3.3 summarizes some of the potentially negative impacts of the Internet on business firms identified by Porter.

The Internet has nearly destroyed some industries and has severely threatened others. For instance, the printed encyclopedia industry and the travel agency industry have been nearly decimated by the availability of substitutes over the Internet. Likewise, the Internet has had a significant impact on the retail, music, book, retail brokerage, software, telecommunications, and travel industries. The chapter-ending case provides a detailed discussion of the Internet’s impact on publishing.

However, the Internet has also created entirely new markets, formed the basis for thousands of new products, services, and business models, and provided new opportunities for building brands with very large and loyal customer bases. Amazon, eBay, iTunes, YouTube, Facebook, Travelocity, and Google are examples. In this sense, the Internet is “transforming” entire industries, forcing firms to change how they do business.

<table>
<thead>
<tr>
<th>Competitive Force</th>
<th>Impact of the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substitute products or services</td>
<td>Enables new substitutes to emerge with new approaches to meeting needs and performing functions</td>
</tr>
<tr>
<td>Customers’ bargaining power</td>
<td>Shifts bargaining power to customers due to the availability of global price and product information</td>
</tr>
<tr>
<td>Suppliers’ bargaining power</td>
<td>Tends to raise bargaining power over suppliers in procuring products and services; however, suppliers can benefit from reduced barriers to entry and from the elimination of distributors and other intermediaries standing between them and their users</td>
</tr>
<tr>
<td>Threat of new entrants</td>
<td>Reduces barriers to entry, such as the need for a sales force, access to channels, and physical assets; it provides a technology for driving business processes that makes other things easier to do</td>
</tr>
<tr>
<td>Positioning and rivalry among existing competitors</td>
<td>Widens the geographic market, increasing the number of competitors and reducing differences among competitors; makes it more difficult to sustain operational advantages; puts pressure to compete on price</td>
</tr>
</tbody>
</table>
THE BUSINESS VALUE CHAIN MODEL

Although the Porter model is very helpful for identifying competitive forces and suggesting generic strategies, it is not very specific about what exactly to do, and it does not provide a methodology to follow for achieving competitive advantages. If your goal is to achieve operational excellence, where do you start? Here’s where the business value chain model is helpful.

The value chain model highlights specific activities in the business where competitive strategies can best be applied (Porter, 1985) and where information systems are most likely to have a strategic impact. This model identifies specific, critical leverage points where a firm can use information technology most effectively to enhance its competitive position. The value chain model views the firm as a series or chain of basic activities that add a margin of value to a firm’s products or services. These activities can be categorized as either primary activities or support activities (see Figure 3.2).

Primary activities are most directly related to the production and distribution of the firm’s products and services, which create value for the customer. Primary activities include inbound logistics, operations, outbound logistics, sales and marketing, and service. Inbound logistics includes receiving and storing materials for distribution to production. Operations transforms inputs into finished products. Outbound logistics entails storing and distributing finished products. Sales and marketing includes promoting and selling the firm’s products. The service activity includes maintenance and repair of the firm’s goods and services.

Support activities make the delivery of the primary activities possible and consist of organization infrastructure (administration and management), human resources (employee recruiting, hiring, and training), technology (improving products and the production process), and procurement (purchasing input).

You can ask at each stage of the value chain, “How can we use information systems to improve operational efficiency and improve customer and supplier intimacy?” This will force you to critically examine how you perform value-adding activities at each stage and how the business processes might be improved. For example, value chain analysis would...
indicate that Verizon, described in the chapter-opening case, should improve its processes for product development and quality control. You can also begin to ask how information systems can be used to improve the relationship with customers and with suppliers who lie outside the firm value chain but belong to the firm’s extended value chain where they are absolutely critical to your success. Here, supply chain management systems that coordinate the flow of resources into your firm, and customer relationship management systems that coordinate your sales and support employees with customers, are two of the most common system applications that result from a business value chain analysis. We discuss these enterprise applications in detail later in Chapter 8.

Using the business value chain model will also cause you to consider benchmarking your business processes against your competitors or others in related industries, and identifying industry best practices. Benchmarking involves comparing the efficiency and effectiveness of your business processes against strict standards and then measuring performance against those standards. Industry best practices are usually identified by consulting companies, research organizations, government agencies, and industry associations as the most successful solutions or problem-solving methods for consistently and effectively achieving a business objective.

Once you have analyzed the various stages in the value chain at your business, you can come up with candidate applications of information systems. Then, once you have a list of candidate applications, you can decide which to develop first. By making improvements in your own business value chain that your competitors might miss, you can achieve competitive advantage by attaining operational excellence, lowering costs, improving profit margins, and forging a closer relationship with customers and suppliers. If your competitors are making similar improvements, then at least you will not be at a competitive disadvantage—the worst of all cases!

Extending the Value Chain: The Value Web
Figure 3.2 shows that a firm’s value chain is linked to the value chains of its suppliers, distributors, and customers. After all, the performance of most firms depends not only on what goes on inside a firm but also on how well the firm coordinates with direct and indirect suppliers, delivery firms (logistics partners, such as FedEx or UPS), and, of course, customers.

How can information systems be used to achieve strategic advantage at the industry level? By working with other firms, industry participants can use information technology to develop industry-wide standards for exchanging information or business transactions electronically, which force all market participants to subscribe to similar standards. Such efforts increase efficiency, making product substitution less likely and perhaps raising entry costs—thus discouraging new entrants. Also, industry members can build industry-wide, IT-supported consortia, symposia, and communications networks to coordinate activities concerning government agencies, foreign competition, and competing industries.

Looking at the industry value chain encourages you to think about how to use information systems to link up more efficiently with your suppliers, strategic partners, and customers. Strategic advantage derives from your ability to relate your value chain to the value chains of other partners in the process. For instance, if you are Amazon.com, you would want to build systems that

- Make it easy for suppliers to display goods and open stores on the Amazon site
- Make it easy for customers to pay for goods
- Develop systems that coordinate the shipment of goods to customers
- Develop shipment tracking systems for customers

In fact, this is exactly what Amazon has done to make it one of the Web’s most satisfying online retail shopping sites.

Internet technology has made it possible to create highly synchronized industry value chains called value webs. A value web is a collection of independent firms that use information technology to coordinate their value chains to produce a product or service for a
market collectively. It is more customer driven and operates in a less linear fashion than the traditional value chain.

Figure 3.3 shows that this value web synchronizes the business processes of customers, suppliers, and trading partners among different companies in an industry or in related industries. These value webs are flexible and adaptive to changes in supply and demand. Relationships can be bundled or unbundled in response to changing market conditions. Firms will accelerate time to market and to customers by optimizing their value web relationships to make quick decisions on who can deliver the required products or services at the right price and location.

**SYNERGIES, CORE COMPETENCIES, AND NETWORK-BASED STRATEGIES**

A large corporation is typically a collection of businesses. Often, the firm is organized financially as a collection of strategic business units, and the returns to the firm are directly tied to the performance of all the units. For instance, General Electric—one of the largest industrial firms in the world—is a collection of aerospace, heavy manufacturing, electrical appliance, medical imaging, electronics, and financial services firms called business units. Information systems can improve the overall performance of these business units by promoting communication, synergies, and core competencies among the units.

**Synergies**

Synergies develop when the output of some units can be used as inputs to other units, or two organizations can pool markets and expertise, and these relationships lower costs and generate profits. Recent bank and financial firm mergers, such as the merger of Bank of America and Countrywide Financial and JPMorgan Chase and Washington Mutual occurred precisely for this purpose.

One use of information technology in these synergy situations is to tie together the operations of disparate business units so that they can act as a whole. For example, acquiring Countrywide Financial enabled Bank of America to expand its mortgage lending business and acquire a large pool of new customers that might be interested in its credit

![Figure 3.3](image)
cards, consumer banking, and other financial products. Information systems would help the merged companies consolidate operations, lower retailing costs, and increase cross-marketing of financial products.

**Enhancing Core Competencies**

Another use of information systems for competitive advantage is to think about ways that systems can enhance core competencies. The argument is that the performance of all business units can increase insofar as these business units develop, or create, a central core of competencies. A **core competency** is an activity for which a firm is a world-class leader. Core competencies may involve being the world’s best miniature parts designer, the best package delivery service, or the best thin-film manufacturer. In general, a core competency relies on knowledge that is gained over many years of experience and a first-class research organization, or simply key people who follow the literature and stay abreast of new external knowledge.

Any information system that encourages the sharing of knowledge across business units enhances competency. Such systems might encourage or enhance existing competencies and help employees become aware of new external knowledge; such systems might also help a business leverage existing competencies to related markets.

For example, Procter & Gamble (P&G), a world leader in brand management and consumer product innovation, uses a series of systems to enhance its core competencies. P&G uses an intranet called InnovationNet to help people working on similar problems share ideas and expertise. The system connects those working in research and development (R&D), engineering, purchasing, marketing, legal affairs, and business information systems around the world, using a portal to provide browser-based access to documents, reports, charts, videos, and other data from various sources. InnovationNet added a directory of subject matter experts who can be tapped to give advice or collaborate on problem solving and product development, and created links to outside research scientists and 150 entrepreneurs who are searching for new, innovative products worldwide.

**Network-Based Strategies**

Internet and networking technology have spawned strategies that take advantage of firms’ abilities to create networks or network with each other. Network-based strategies include the use of network economics and a virtual company model.

Business models based on a network may help firms strategically by taking advantage of **network economics**. In traditional economics—the economics of factories and agriculture—production experiences diminishing returns. The more any given resource is applied to production, the lower the marginal gain in output, until a point is reached where the additional inputs produce no additional outputs. This is the law of diminishing returns, and it is one foundation of modern economics.

In some situations, the law of diminishing returns does not work. For instance, in a network, the marginal costs of adding another participant are about zero, whereas the marginal gain is much larger. The larger the number of subscribers in a telephone system or the Internet, the greater the value to all participants because each user can interact with more people. It is no more expensive to operate a television station with 1,000 subscribers than with 10 million subscribers. The value of a community of people grows with size, whereas the cost of adding new members is inconsequential.

From this network economics perspective, information technology can be strategically useful. Internet sites can be used by firms to build **communities of users**—like-minded customers who want to share their experiences. This can build customer loyalty and enjoyment, and build unique ties to customers. eBay, the giant online auction site, and iVillage, an online community for women, are examples. Both businesses are based on networks of millions of users, and both companies have used the Web and Internet communication tools to build communities. The more people offering products on eBay,
the more valuable the eBay site is to everyone because more products are listed, and more competition among suppliers lowers prices. Network economics also provide strategic benefits to commercial software vendors. The value of their software and complementary software products increases as more people use them, and there is a larger installed base to justify continued use of the product and vendor support.

Another network-based strategy uses the model of a virtual company to create a competitive business. A virtual company, also known as a virtual organization, uses networks to link people, assets, and ideas, enabling it to ally with other companies to create and distribute products and services without being limited by traditional organizational boundaries or physical locations. One company can use the capabilities of another company without being physically tied to that company. The virtual company model is useful when a company finds it cheaper to acquire products, services, or capabilities from an external vendor or when it needs to move quickly to exploit new market opportunities and lacks the time and resources to respond on its own.

Fashion companies, such as GUESS, Ann Taylor, Levi Strauss, and Reebok, enlist Hong Kong-based Li & Fung to manage production and shipment of their garments. Li & Fung handles product development, raw material sourcing, production planning, quality assurance, and shipping. Li & Fung does not own any fabric, factories, or machines, outsourcing all of its work to a network of more than 7,500 suppliers in 37 countries all over the world. Customers place orders to Li & Fung over its private extranet. Li & Fung then sends instructions to appropriate raw material suppliers and factories where the clothing is produced. The Li & Fung extranet tracks the entire production process for each order. Working as a virtual company keeps Li & Fung flexible and adaptable so that it can design and produce the products ordered by its clients in short order to keep pace with rapidly changing fashion trends.

**DISRUPTIVE TECHNOLOGIES: RIDING THE WAVE**

Sometimes a technology and resulting business innovation comes along to radically change the business landscape and environment. These innovations are loosely called “disruptive.” (Christensen, 2003). In some cases, disruptive technologies are substitute products that perform as well or better than anything currently produced. The automobile substituted for the horse-drawn carriage; the Apple iPod for portable CD players; digital photography for process film photography. In these cases, entire industries are put out of business.

In other cases, disruptive technologies simply extend the market, usually with less functionality and much less cost, than existing products. Eventually they turn into low-cost competitors for whatever was sold before. Disk drives are an example: small hard disk drives used in PCs extended the market for computer disk drives by offering cheap digital storage for small files on small computers. Eventually, small PC hard disk drives became the largest segment of the disk drive marketplace.

Some firms are able to create these technologies and ride the wave to profits, whereas others learn quickly and adapt their business; still others are obliterated because their products, services, and business models become obsolete. There are also cases where no firms benefit, and all gains go to consumers (firms fail to capture any profits). Table 3.4 provides examples of some disruptive technologies.

Disruptive technologies are tricky. Firms that invent disruptive technologies as “first movers” do not always benefit if they lack the resources to exploit the technology or fail to see the opportunity. The MITS Altair 8800 is widely regarded as the first PC, but its inventors did not take advantage of their first mover status. Second movers, so-called “fast followers” such as IBM and Microsoft, reaped the rewards. Citibank’s ATMs revolutionized retail banking, but they were copied by other banks. Now all banks use ATMs, with the benefits going mostly to the consumers.
<table>
<thead>
<tr>
<th>Technology</th>
<th>Description</th>
<th>Winners and Losers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microprocessor chips (1971)</td>
<td>Thousands and eventually millions of transistors on a silicon chip</td>
<td>Microprocessor firms win (Intel, Texas Instruments) while transistor firms (GE) decline</td>
</tr>
<tr>
<td>Personal computers (1975)</td>
<td>Small, inexpensive, but fully functional desktop computers</td>
<td>PC manufacturers (HP, Apple, IBM), and chip manufacturers prosper (Intel), while mainframe (IBM) and minicomputer (DEC) firms lose</td>
</tr>
<tr>
<td>Digital photography 1975</td>
<td>Using charge-coupled device (CCD) image sensor chips to record images</td>
<td>CCD manufacturers and traditional camera companies win, manufacturers of film products lose</td>
</tr>
<tr>
<td>World Wide Web (1989)</td>
<td>A global database of digital files and “pages” instantly available</td>
<td>Owners of online content, news benefit while traditional publishers (newspaper, magazines, and broadcast television) lose</td>
</tr>
<tr>
<td>Internet music, video, TV services</td>
<td>Repositories of downloadable music, video, TV broadcasts on the Web</td>
<td>Owners of Internet platforms, telecommunications providers owning Internet backbone (AT&amp;T, Verizon), local Internet service providers win, while content owners and physical retailers lose (Tower Records, Blockbuster)</td>
</tr>
<tr>
<td>PageRank algorithm</td>
<td>A method for ranking Web pages in terms of their popularity to supplement Web search by key terms</td>
<td>Google is the winner (they own the patent), while traditional key word search engines (Alta Vista) lose</td>
</tr>
<tr>
<td>Software as Web service</td>
<td>Using the Internet to provide remote access to online software</td>
<td>Online software services companies (Salesforce.com) win, while traditional “boxed” software companies (Microsoft, SAP, Oracle) lose</td>
</tr>
</tbody>
</table>

### 3.2 Competing on a Global Scale

Look closely at your jeans or sneakers. Even if they have a U.S. label, they were probably designed in California and stitched together in Hong Kong or Guatemala using materials from China or India. Call Microsoft Support, or Verizon Support, and chances are good you will be speaking to a customer service representative located in India.

Consider the path to market for an iPhone, which is illustrated in Figure 3.4. The iPhone was designed by Apple engineers in the United States, sourced with more than 100 high-tech components from around the world, and assembled in China. Among the iPhone’s major suppliers, Samsung Electronics in South Korea has supplied the flash memory and applications processor. The iPhone 4’s accelerometer and gyroscope are made in Italy and France by STMicroelectronics, and its electronic compass is made by AKM Semiconductor in Japan. Germany’s Infineon Technologies supplies chips that send and receive phone calls and data. Texas Instruments (TI) supplies the touch screen controller, while South Korea’s LG Display makes the high-definition display screen. Foxconn, a Chinese division of Taiwan’s Hon Hai Group, is in charge of manufacturing and assembly.
Firms pursuing a global strategy benefit from economies of scale and resource cost reduction (usually wage cost reduction). Apple spread design, sourcing, and production for its iPhone over multiple countries overseas to reduce logistics, tariffs, and labor costs. Digital content firms that produce Hollywood movies are able to sell millions more copies of DVDs of popular films by using foreign markets.

THE INTERNET AND GLOBALIZATION

Up until the mid-1990s, competing on a global scale was dominated by huge multinational firms, such as General Electric, General Motors, Toyota, and IBM. These large firms could afford huge investments in factories, warehouses, and distribution centers in foreign countries and proprietary networks and systems that could operate on a global scale. The emergence of the Internet into a full-blown international communications system has drastically reduced the costs of operating on a global scale, deepening the possibilities for large companies but simultaneously creating many opportunities for small and medium-sized firms.

The global Internet, along with internal information systems, puts manufacturing firms in nearly instant contact with their suppliers. Internet telephony permits millions of service calls to U.S. companies to be answered in India and Jamaica, just as easily and cheaply as if the help desk were in New Jersey or California. Likewise, the Internet makes it possible to move very large computer files with hundreds of graphics, or complex industrial designs, across the globe in seconds.

Small and medium-sized firms have created an entirely new class of “micromultinational firms.” For instance, CEO Brad Oberwager runs Sundia, a company that sells premium cut fruit to more than 6,000 grocery and convenience stores in the United States and Canada out of his San Francisco home. Oberwager has employees in other parts of the United States as well as in India and the Philippines, and they use Web-based information systems to manage and coordinate. A Sundia employee in the Philippines is able to take orders from a Boston grocery store for watermelon juice made from Mexican fruit. The juice is squeezed in Washington State and payment goes to Oberwager in California.

GLOBAL BUSINESS AND SYSTEM STRATEGIES

There are four main ways of organizing businesses internationally: domestic exporter, multinational, franchiser, and transnational, each with different patterns of organizational structure or governance. In each type of global business organization, business functions...
may be centralized (in the home country), decentralized (to local foreign units), and coordinated (all units participate as equals).

The **domestic exporter** strategy is characterized by heavy centralization of corporate activities in the home country of origin. Production, finance/accounting, sales/marketing, human resources, and strategic management are set up to optimize resources in the home country. International sales are sometimes dispersed using agency agreements or subsidiaries, but foreign marketing is still totally reliant on the domestic home base for marketing themes and strategies. Caterpillar Corporation and other heavy capital equipment manufacturers fall into this category of firm.

A **multinational** strategy concentrates financial management and control out of a central home base while decentralizing production, sales, and marketing operations to units in other countries. The products and services on sale in different countries are adapted to suit local market conditions. The organization becomes a far-flung confederation of production and marketing facilities operating in different countries. Many financial service firms, along with a host of manufacturers such as Ford Motor Co. and Intel Corporation, fit this pattern.

**Franchisers** have the product created, designed, financed, and initially produced in the home country but rely heavily on foreign personnel for further production, marketing, and human resources. Food franchisers, such as McDonald’s and Starbucks, fit this pattern. McDonald’s created a new form of fast-food chain in the United States and continues to rely largely on the United States for inspiration of new products, strategic management, and financing. Nevertheless, local production of some items, local marketing, and local recruitment of personnel are required.

Transnational firms have no single national headquarters but instead have many regional headquarters and perhaps a world headquarters. In a **transnational** strategy, nearly all the value-adding activities are managed from a global perspective without reference to national borders, optimizing sources of supply and demand wherever they appear and taking advantage of any local competitive advantages. There is a strong central management core of decision making but considerable dispersal of power and financial muscle throughout the global divisions. Few companies have actually attained transnational status, but Citigroup, Sony, and Nestlé are attempting this transition.

Nestlé S.A., the largest food and beverage company in the world, is one of the world’s most globalized companies, with nearly 280,000 employees at 500 facilities in 200 countries. Nestlé launched a $2.4 billion initiative to adopt a single set of business processes and systems for procurement, distribution, and sales management using mySAP enterprise software. All of Nestlé’s worldwide business units use the same processes and systems for making sales commitments, establishing factory production schedules, billing customers, compiling management reports, and reporting financial results. Nestlé has learned how to operate as a single unit on a global scale.

**GLOBAL SYSTEM CONFIGURATION**

Figure 3.5 depicts four types of systems configurations for global business organizations. **Centralized systems** are those in which systems development and operation occur totally at the domestic home base. **Duplicated systems** are those in which development occurs at the home base but operations are handed over to autonomous units in foreign locations. **Decentralized systems** are those in which each foreign unit designs its own unique solutions and systems. **Networked systems** are those in which systems development and operations occur in an integrated and coordinated fashion across all units.

As can be seen in Figure 3.5, domestic exporters tend to have highly centralized systems in which a single domestic systems development staff develops worldwide applications. Multinationals allow foreign units to devise their own systems solutions based on local needs with few, if any, applications in common with headquarters (the exceptions being financial reporting and some telecommunications applications). Franchisers typically develop a
single system, usually at the home base, and then replicate it around the world. Each unit, no matter where it is located, has identical applications. Firms such as Nestle organized along transnational lines use networked systems that span multiple countries using powerful telecommunications networks and a shared management culture that crosses cultural barriers.

### 3.3 Competing on Quality and Design

Quality has developed from a business buzzword into a very serious goal for many companies. Quality is a form of differentiation. Companies with reputations for high quality, such as Lexus or Nordstrom, are able to charge premium prices for their products and services. Information systems have a major contribution to make in this drive for quality. In the services industries in particular, quality strategies are generally enabled by superior information systems and services.

#### WHAT IS QUALITY?

**Quality** can be defined from both producer and customer perspectives. From the perspective of the producer, quality signifies conformance to specifications or the absence of variation from those specifications. The specifications for a telephone might include one that states the strength of the phone should be such that it will not be dented or otherwise damaged by a drop from a four-foot height onto a wooden floor. A simple test will allow this specification to be measured.

A customer definition of quality is much broader. First, customers are concerned with the quality of the physical product—it's durability, safety, ease of use, and installation. Second, customers are concerned with the quality of service, by which they mean the accuracy and truthfulness of advertising, responsiveness to warranties, and ongoing product support. Finally, customer concepts of quality include psychological aspects: the company's knowledge of its products, the courtesy and sensitivity of sales and support staff, and the reputation of the product.

Today, as the quality movement in business progresses, the definition of quality is increasingly from the perspective of the customer. Customers are concerned with getting value for their dollar and product fitness, performance, durability, and support.

Many companies have embraced the concept of total quality management (TQM). Total quality management makes quality the responsibility of all people and functions within an organization. TQM holds that the achievement of quality control is an end in itself. Everyone is expected to contribute to the overall improvement of quality—the engineer who avoids design errors, the production worker who spots defects, the sales representative who presents the product properly to potential customers, and even the secretary who avoids typing mistakes. TQM derives from quality management concepts developed by American quality experts, such as W. Edwards Deming and Joseph Juran, but the Japanese popularized it.
Another quality concept that is widely implemented today is six sigma, which Amazon.com used to reduce errors in order fulfillment. Six sigma is a specific measure of quality, representing 3.4 defects per million opportunities. Most companies cannot achieve this level of quality but use six sigma as a goal to implement a set of methodologies and techniques for improving quality and reducing costs. Studies have repeatedly shown that the earlier in the business cycle a problem is eliminated, the less it costs the company. Thus, quality improvements not only raise the level of product and service quality but they can also lower costs.

**HOW INFORMATION SYSTEMS IMPROVE QUALITY**

Let’s examine some of the ways companies face the challenge of improving quality to see how information systems can be part of the process.

**Reduce Cycle Time and Simplify the Production Process**

Studies have shown that one of the best ways to reduce quality problems is to reduce cycle time, which refers to the total elapsed time from the beginning of a process to its end. Shorter cycle times mean that problems are caught earlier in the process, often before the production of a defective product is completed, saving some of the hidden production costs. Finally, finding ways to reduce cycle time often means finding ways to simplify production steps. The fewer steps in a process, the less time and opportunity for an error to occur. Information systems help eliminate steps in a process and critical time delays.

800-Flowers, a multimillion-dollar company selling flowers by telephone or over the Web, used to be a much smaller company that had difficulty retaining its customers. It had poor service, inconsistent quality, and a cumbersome manual order-taking process. Telephone representatives had to write each order, obtain credit card approval, determine which participating florist was closest to the delivery location, select a floral arrangement, and forward the order to the florist. Each step in the manual process increased the chance of human error, and the whole process took at least a half hour. Owners Jim and Chris McCann installed a new information system that downloads orders taken in telecenters or over the Web to a central computer and electronically transmits them to local florists. As a result, orders are more accurate and arrive at the florist within two minutes.

**Benchmark**

Companies achieve quality by using benchmarking to set standards for products, services, and other activities, and then measuring performance against those standards. Companies may use external industry standards, standards set by other companies, internally developed standards, or some combination of the three. L.L.Bean, the Freeport, Maine, outdoor clothing company, used benchmarking to achieve an order-shipping accuracy of 99.9 percent. Its old batch order fulfillment system could not handle the surging volume and variety of items to be shipped. After studying German and Scandinavian companies with leading-edge order fulfillment operations, L.L.Bean carefully redesigned its order fulfillment process and information systems so that orders could be processed as soon as they were received and shipped within 24 hours.

**Use Customer Demands to Improve Products and Services**

Improving customer service, and making customer service the number one priority, will improve the quality of the product itself. Delta Airlines decided to focus on its customers, installing a customer care system at its airport gates. For each flight, the airplane seating chart, reservations, check-in information, and boarding data are linked in a central database. Airline personnel can track which passengers are on board regardless of where they checked in and use this information to help passengers reach their destination quickly, even if delays cause them to miss connecting flights.
Improve Design Quality and Precision

Computer-aided design (CAD) software has made a major contribution to quality improvements in many companies, from producers of automobiles to producers of razor blades. A computer-aided design (CAD) system automates the creation and revision of designs, using computers and sophisticated graphics software. The software enables users to create a digital model of a part, a product, or a structure, and make changes to the design on the computer without having to build physical prototypes.

Troy Lee Designs, which makes sports helmets, recently invested in CAD design software that could create the helmets in 3-D. The technology defined the shapes better than traditional methods, which involved sketching an idea on paper, hand-molding a clay model, and shipping the model to Asian factories to create a plastic prototype. Production is now about six months faster and about 35 percent cheaper, with Asian factories about to produce an exact replica after receiving the digital design via e-mail (Maltby, 2010).

Improve Production Precision and Tighten Production Tolerances

For many products, quality can be enhanced by making the production process more precise, thereby decreasing the amount of variation from one part to another. CAD software often produces design specifications for tooling and manufacturing processes, saving additional time and money while producing a manufacturing process with far fewer problems. The user of this software is able to design a more precise production system, a system with tighter tolerances, than could ever be done manually.

3.4 Competing on Business Processes

Technology alone is often not enough to make organizations more competitive, efficient, or quality-oriented. The organization itself needs to be changed to take advantage of the power of information technology. These changes may require minor adjustments in work activities, but, often, entire business processes will need to be redesigned. Business process management (BPM) addresses these needs.
WHAT IS BUSINESS PROCESS MANAGEMENT?

Business process management (BPM) is an approach to business which aims to continuously improve business processes. BPM uses a variety of tools and methodologies to understand existing processes, design new processes, and optimize those processes. BPM is never concluded because continuous improvement requires continual change. Companies practicing business process management need to go through the following steps:

1. **Identify processes for change:** One of the most important strategic decisions that a firm can make is not deciding how to use computers to improve business processes, but rather understanding what business processes need improvement. When systems are used to strengthen the wrong business model or business processes, the business can become more efficient at doing what it should not do. As a result, the firm becomes vulnerable to competitors who may have discovered the right business model. Considerable time and cost may also be spent improving business processes that have little impact on overall firm performance and revenue. Managers need to determine what business processes are the most important and how improving these processes will help business performance.

2. **Analyze existing processes:** Existing business processes should be modeled and documented, noting inputs, outputs, resources, and the sequence of activities. The process design team identifies redundant steps, paper-intensive tasks, bottlenecks, and other inefficiencies.

Figure 3.6 illustrates the “as-is” process for purchasing a book from a physical bookstore. Consider what happens when a customer visits a physical bookstore and searches its shelves for a book. If he or she finds the book, that person takes it to the checkout counter and pays for it via credit card, cash, or check. If the customer is unable to locate the book, he or she

![As-Is Business Process for Purchasing a Book from a Physical Bookstore](image-url)
must ask a bookstore clerk to search the shelves or check the bookstore’s inventory records to see if it is in stock. If the clerk finds the book, the customer purchases it and leaves. If the book is not available locally, the clerk inquires about ordering it for the customer, either from the bookstore’s warehouse or from the book’s distributor or publisher. Once the ordered book arrives at the bookstore, a bookstore employee telephones the customer with this information. The customer would have to go to the bookstore again to pick up the book and pay for it. If the bookstore is unable to order the book for the customer, the customer would have to try another bookstore. You can see that this process has many steps and might require the customer to make multiple trips to the bookstore.

3. **Design the new process:** Once the existing process is mapped and measured in terms of time and cost, the process design team will try to improve the process by designing a new one. A new streamlined “to-be” process will be documented and modeled for comparison with the old process.

   Figure 3.7 illustrates how the book purchasing process can be redesigned by taking advantage of the Internet. The customer accesses an online bookstore over the Internet from his or her computer. He or she searches the bookstore’s online catalog for the book he or she wants. If the book is available, the customer orders the book online, supplying credit card and shipping address information, and the book is delivered to the customer’s home. If the online bookstore does not carry the book, the customer selects another online bookstore and searches for the book again. This process has far fewer steps than that for purchasing the book in a physical bookstore, requires much less effort on the part of the customer, and requires less sales staff for customer service. The new process is therefore much more efficient and time-saving.

   The new process design needs to be justified by showing how much it reduces time and cost or enhances customer service and value. Management first measures the time and cost of the existing process as a baseline. In our example, the time required for purchasing a book from a physical bookstore might range from 15 minutes (if the customer immediately finds what he or she wants) to 30 minutes if the book is in stock but has to be located by sales staff. If the book has to be ordered from another source, the process might take one or two weeks and another trip to the bookstore for the customer. If the customer lives far away from the bookstore, the time to travel to the bookstore would have to be factored in. The bookstore will have to pay the costs for maintaining a physical store and keeping the book in stock, for sales staff on site, and for shipment costs if the book has to be obtained from another location.

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**Figure 3.7**

Redesigned Process for Purchasing a Book Online

Using Internet technology makes it possible to redesign the process for purchasing a book so that it only has a few steps and consumes much fewer resources.
The new process for purchasing a book online might only take several minutes, although the customer might have to wait several days or weeks to receive the book in the mail and will have to pay a small shipping charge. But the customer saves time and money by not having to travel to the bookstore or make additional visits to pick up the book. Book sellers’ costs are lower because they do not have to pay for a physical store location or for local inventory.

4. Implement the new process: Once the new process has been thoroughly modeled and analyzed, it must be translated into a new set of procedures and work rules. New information systems or enhancements to existing systems may have to be implemented to support the redesigned process. The new process and supporting systems are rolled out into the business organization. As the business starts using this process, problems are uncovered and addressed. Employees working with the process may recommend improvements.

5. Continuous measurement: Once a process has been implemented and optimized, it needs to be continually measured. Why? Processes may deteriorate over time as employees fall back on old methods, or they may lose their effectiveness if the business experiences other changes.

Over 100 software firms provide tools for various aspects of BPM, including IBM, Oracle, and Tibco. These tools help businesses identify and document processes requiring improvement, create models of improved processes, capture and enforce business rules for performing processes, and integrate existing systems to support new or redesigned processes. BPM software tools also provide analytics for verifying that process performance has been improved and for measuring the impact of process changes on key business performance indicators.

The Interactive Session on Organizations provides an example of a company that benefited competitively from business process management. As with any company that rapidly expands from a small business to a global brand, Burton Snowboards found that some of its business processes had become outdated. Burton has made serious efforts to improve these processes and turn their weaknesses into strengths.

**Business Process Reengineering**

Many business process improvements are incremental and ongoing, but occasionally, more radical change is required. Our example of a physical bookstore redesigning the book purchasing process so that it can be carried out online is an example of this type of radical, far-reaching change. This radical rethinking and redesign of business processes is called **business process reengineering (BPR)**.

When properly implemented, BPR can lead to dramatic gains in productivity and efficiency, even changing the way the business is run. In some instances, it drives a “paradigm shift” that transforms the nature of the business itself. This actually happened in book retailing when Amazon challenged traditional physical bookstores with its online retail model. By radically rethinking the way a book can be purchased and sold, Amazon and other online bookstores have achieved remarkable efficiencies, cost reductions, and a whole new way of doing business.

BPM poses challenges. Executives report that the largest single barrier to successful business process change is organizational culture. Employees do not like unfamiliar routines, and often try to resist change. This is especially true of business process reengineering projects because the organizational changes are so far-reaching. Managing change is neither simple nor intuitive, and companies committed to extensive process improvement need a good change management strategy (see Chapter 11).
INTERACTIVE SESSION: ORGANIZATIONS

When we hear “snowboarding,” we tend to think of snow-covered slopes, acrobatic jumps, and high-flying entertainment. We don’t usually think of improving business process efficiency. But snowboarding is business for Burton Snowboards, an industry pioneer and market leader. Founded in 1977 by Jake Burton Carpenter and headquartered in Burlington, Vermont, Burton designs, manufactures, and markets equipment, clothing, and related accessories for snowboarders. Today, Burton is a global enterprise that serves customers in 27 countries and has offices in Japan, Austria, and throughout the United States.

At its peak, Burton controlled over 40 percent of the U.S. snowboarding market, and it remains the market leader amidst a growing number of competitors. Now, as Burton continues to expand into a global company, it has a new set of problems: improving its systems for inventory, supply chain, purchasing, and customer service.

Stocking and managing inventory is a difficult problem for Burton, whose inventory changes dramatically depending on product line updates and the time of the year. Burton takes feedback from its customers very seriously, and will move quickly to meet their needs. For instance, if a rider tests a jacket and recommends repositioning a zipper, Burton’s production line must be able to make this modification quickly and easily. Being dynamic and adaptable is a competitive necessity.

Burton has implemented and currently maintains SAP enterprise software, an Oracle database, a SUSE Linux enterprise server, and commodity hardware. That’s a long way from a lone woodworking shop in Vermont. Before making these upgrades, Burton’s information systems were a hodgepodge of inconsistently implemented and underutilized software. The company had to manually allocate product to customers and orders. In 1997, Burton first deployed SAP to begin upgrading its IT landscape, and the company has continued to use SAP since that time. But Burton needed to do more with its systems.

Two of Burton’s IT goals, established by CIO Kevin Ubert, are to “strengthen the foundation,” and keep their systems “simple, standard, (and) supportable.” The ‘foundation’ Ubert referred to is SAP Enterprise Resource Planning (ERP) software. Rather than buying new software to solve IT problems, Burton decided that it would explore basic functionalities of SAP enterprise resource planning (ERP) software that it had not used yet. Often, Burton could resolve problems this way without adding new layers of complexity to its IT infrastructure, and the company gained proficiency with SAP enterprise software in the process. Burton aims for standard, traditional versions of software whenever possible, realizing that with more bells and whistles comes increased maintenance costs and steeper learning curves to understanding the software.

SAP analysts helped Burton identify the top five transactions that were the most critical to its business operations and that needed optimization from a systems standpoint. Burton had to identify unnecessarily complicated processes, backlogs, and design gaps in the flow of its business processes. For example, the available-to-promise process was taking hours to complete. (Available to promise, in response to customer order enquiries, reports on available quantities of a requested product and delivery due dates.) Burton wanted to speed up this process so that its dealers and retail customers would have more precise information about the availability of products not currently in stock. Completing this process now takes 20 minutes.

Other processes in need of improvement included the order-to-cash process (receiving and processing customer sales, including order entry, fulfillment, distribution, and payment); the handling of overdue purchase orders in the procure-to-pay process, which consists of all the steps from purchasing goods from a supplier to paying the supplier; and the electronic data interchange (EDI) inventory feed extract transaction. Burton has an assortment of warehouses which pass inventory data to one another automatically using EDI systems. Thousands of items are moving from warehouse to warehouse and thousands of transactions occur each day at each warehouse. Burton found that the process of reporting inventory was inefficient, and both suppliers and customers could not easily determine up-to-date information on which items were in stock at which warehouse. SAP and Burton worked together to improve communication between warehouses and supply chain efficiency.

A management dashboard developed with the help of SAP shows how smoothly a critical process is running at a certain point in time. Information from the dashboard helps Burton’s key users discover inconsistencies, gaps, or other areas that they should be monitoring more closely.

All of these process improvements proved especially valuable during what Burton calls its “reorder” season. Burton’s dealers place orders to stock their stores well before winter sets in. As consumers start buying the merchandise, the dealers reorder with Burton to replenish their stock or to buy new
products. Now they are able to see more timely product availability data, and receive orders more rapidly.

**CASE STUDY QUESTIONS**

1. Analyze Burton using the value chain and competitive forces models.

2. Why are the business processes described in this case such an important source of competitive advantage for Burton?

3. Explain exactly how these process improvements enhance Burton’s operational performance and decision making.

**MIS IN ACTION**

Visit Burton Snowboards’ Web site, then answer the following questions:

1. What is the purpose of this Web site? How does it support the company’s goals?

2. What functions at this Web site are related to the business processes discussed in this case? How did improving those processes impact the Web site?

**LEARNING TRACKS**

The following Learning Tracks provide content relevant to topics covered in this chapter:

1. Challenges of Information Systems for Competitive Advantage
2. Primer on Business Process Management
3. Primer on Business Process Design

**Review Summary**

1. **How does Porter’s competitive forces model help companies develop competitive strategies using information systems?** In Porter’s competitive forces model, the strategic position of the firm, and its strategies, are determined by competition with its traditional direct competitors. They are also greatly affected by new market entrants, substitute products and services, suppliers, and customers. Information systems help companies compete by maintaining low costs, differentiating products or services, focusing on market niche, strengthening ties with customer and suppliers, and increasing barriers to market entry with high levels of operational excellence. Information systems are most successful when the technology is aligned with business objectives.

2. **How do the value chain and value web models help businesses identify opportunities for strategic information system applications?** The value chain model highlights specific activities in the business where competitive strategies and information systems will have the greatest impact. The model views the firm as a series of primary and support activities that add value to a firm’s products or services. Primary activities are directly related to production and distribution, whereas support activities make the delivery of primary activities possible. A firm’s value chain can be linked to the value chains of its suppliers, distributors, and customers. A value web consists of information systems that enhance competitiveness at the industry level by promoting the use of standards and industry-wide consortia, and by enabling businesses to work more efficiently with their value partners.

How do information systems help businesses use synergies, core competences, and network-based strategies to achieve competitive advantage?

Because firms consist of multiple business units, information systems achieve additional efficiencies or enhanced services by tying together the operations of disparate business units. Information systems help businesses leverage their core competencies by promoting the sharing of knowledge across business units. Information systems facilitate business models based on large networks of users or subscribers that take advantage of network economics. A virtual company strategy uses networks to link to other firms so that a company can use the capabilities of other companies to build, market, and distribute products and services. Disruptive technologies provide strategic opportunities, although “first movers” do not necessarily obtain long-term benefit.

How do competing on a global scale and promoting quality enhance competitive advantage?

Information systems and the Internet can help companies operate internationally by facilitating coordination of geographically dispersed units of the company and communication with faraway customers and suppliers. Information systems can enhance quality by simplifying a product or service, facilitating benchmarking, reducing product development cycle time, and improving quality and precision in design and production.

What is the role of business process management (BPM) in enhancing competitiveness?

Organizations often have to change their business processes in order to execute their business strategies successfully. If these business processes use technology, they can be redesigned to make the technology more effective. BPM combines and streamlines the steps in a business process to eliminate repetitive and redundant work and to achieve dramatic improvements in quality, service, and speed. BPM is most effective when it is used to strengthen a good business model and when it strengthens processes that have a major impact on firm performance.

Key Terms

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Review Questions

1. How does Porter’s competitive forces model help companies develop competitive strategies using information systems?
   - Define Porter’s competitive forces model and explain how it works.
   - List and describe four competitive strategies enabled by information systems that firms can pursue.
   - Describe how information systems can support each of these competitive strategies and give examples.
   - Explain why aligning IT with business objectives is essential for strategic use of systems.
2. How do the value chain and value web models help businesses identify opportunities for strategic information system applications?
   • Define and describe the value chain model.
   • Explain how the value chain model can be used to identify opportunities for information systems.
   • Define the value web and show how it is related to the value chain.
   • Explain how the value web helps businesses identify opportunities for strategic information systems.
   • Describe how the Internet has changed competitive forces and competitive advantage.

3. How do information systems help businesses use synergies, core competencies, and network-based strategies to achieve competitive advantage?
   • Explain how information systems promote synergies and core competencies.
   • Describe how promoting synergies and core competencies enhances competitive advantage.
   • Explain how businesses benefit by using network economics.
   • Define and describe a virtual company and the benefits of pursuing a virtual company strategy.
   • Explain how disruptive technologies create strategic opportunities.

4. How do competing on a global scale and promoting quality enhance competitive advantage?
   • Define and describe a virtual company and the benefits of pursuing a virtual company strategy.
   • Explain how globalization has increased opportunities for businesses.
   • List and describe the four main ways of organizing a business internationally and the types of systems configuration for global business organizations.
   • Define quality and compare the producer and consumer definitions of quality.
   • Describe the various ways in which information systems can improve quality.

5. What is the role of business process management (BPM) in enhancing competitiveness?
   • Define BPM and explain how it helps firms become more competitive.
   • Distinguish between BPM and business process reengineering (BPR).
   • List and describe the steps companies should take to make sure BPM is successful.

Discussion Questions

1. It has been said that there is no such thing as a sustainable competitive advantage. Do you agree? Why or why not?
2. What are some of the issues to consider in determining whether the Internet would provide your business with a competitive advantage?
3. It has been said that the advantage that leading-edge retailers such as Walmart have over competitors isn’t technology—it’s their management. Do you agree? Why or why not?

Hands-on MIS Projects

The projects in this section give you hands-on experience identifying information systems to support a business strategy and to solve a customer retention problem, using a database to improve decision making about business strategy, and using Web tools to configure and price an automobile.

MANAGEMENT DECISION PROBLEMS

1. Macy’s, Inc., through its subsidiaries, operates approximately 800 department stores in the United States. Its retail stores sell a range of merchandise, including apparel, home
furnishings, and housewares. Senior management has decided that Macy’s needs to tailor merchandise more to local tastes, and that the colors, sizes, brands, and styles of clothing and other merchandise should be based on the sales patterns in each individual Macy’s store. How could information systems help Macy’s management implement this new strategy? What pieces of data should these systems collect to help management make merchandising decisions that support this strategy?

2. Despite aggressive campaigns to attract customers with lower mobile phone prices, Sprint Nextel has been losing large numbers of monthly contract subscribers. Management wants to know why so many customers are leaving Sprint and what can be done to entice them back. Are customers deserting because of poor customer service, uneven network coverage, wireless service charges, or competition from carriers with Apple iPhone service? How can the company use information systems to help find the answer? What management decisions could be made using information from these systems?

IMPROVING DECISION MAKING: USING A DATABASE TO CLARIFY BUSINESS STRATEGY

Software skills: Database querying and reporting; database design
Business skills: Reservation systems; customer analysis

In this exercise, you’ll use database software to analyze the reservation transactions for a hotel and use that information to fine-tune the hotel’s business strategy and marketing activities.

In MyMISLab, you’ll find a database for hotel reservation transactions developed in Microsoft Access with information about The President’s Inn hotel in Cape May, New Jersey. At the Inn, 10 rooms overlook side streets, 10 rooms have bay windows with limited views of the ocean, and the remaining 10 rooms in the front of the hotel face the ocean. Room rates are based on room choice, length of stay, and number of guests per room. Room rates are the same for one to four guests. Fifth and sixth guests must pay an additional $20 per person per day. Guests staying for seven days or more receive a 10 percent discount on their daily room rates.

The owners currently use a manual reservation and bookkeeping system, which is unable to provide management with immediate data about the hotel’s daily operations and revenue. Use the database to develop reports on average length of stay per room type, average visitors per room type, base revenue per room (i.e., length of visit multiplied by the daily rate) during a specified period of time, and strongest customer base. After answering these questions, write a brief report about the Inn’s current business situation and suggest future strategies.

IMPROVING DECISION MAKING: USING WEB TOOLS TO CONFIGURE AND PRICE AN AUTOMOBILE

Software skills: Internet-based software
Business skills: Researching product information and pricing

In this exercise, you will use software at car-selling Web sites to find product information about a car of your choice and use that information to make an important purchase decision. You will also evaluate two of these sites as selling tools.

You are interested in purchasing a new Ford Escape (or some other car of your choice). Go to the Web site of CarsDirect (www.carsdirect.com) and begin your investigation. Locate the Ford Escape. Research the various Escape models, choose one you prefer in terms of price, features, and safety ratings. Locate and read at least two reviews. Surf the Web site of the manufacturer, in this case Ford (www.ford.com). Compare the information available on Ford’s Web site with that of CarsDirect for the Ford Escape. Try to locate the lowest price for the car you want in a local dealer’s inventory. Suggest improvements for CarsDirect.com and Ford.com.
Video Cases

Video Cases and Instructional Videos illustrating some of the concepts in this chapter are available. Contact your instructor to access these videos.

Collaboration and Teamwork

Identifying Opportunities for Strategic Information Systems

With your team of three or four students, select a company described in the Wall Street Journal, Fortune, Forbes, or another business publication. Visit the company’s Web site to find additional information about that company and to see how the firm is using the Web. On the basis of this information, analyze the business. Include a description of the organization’s features, such as important business processes, culture, structure, and environment, as well as its business strategy. Suggest strategic information systems appropriate for that particular business, including those based on Internet technology, if appropriate. If possible, use Google Sites to post links to Web pages, team communication announcements, and work assignments; to brainstorm; and to work collaboratively on project documents. Try to use Google Docs to develop a presentation of your findings for the class.

BUSINESS PROBLEM-SOLVING CASE

Will Technology Save the Publishing Industry?

The publishing industry is grappling with disruptive technologies that may transform its business models and the way we buy and read books. What is the impact of the Internet and e-book technology on book and newspaper publishing? Who will win and who will lose out, and how will the struggle play out?

Newspapers are the most troubled segment of the publishing industry, due to the availability of alternatives to the printed newspaper and publishers’ inability to protect valuable content from being distributed for free over the Internet. Over 60 percent of newspapers have reduced news staff in the past three years and about the same percentage report reducing the size of their newspapers. Readership has been declining for about a decade and advertising is down 15 percent a year. Alternative online sources of news such as Yahoo, Google, and blogs have become major sources of news for many Americans, especially younger readers.

At first glance, the online newspaper industry appears to be a classic case of a disruptive technology destroying a traditional business model based on physical products and physical distribution. But the newspapers have much valuable content worth preserving and they have acquired a huge online audience. Next to social networks, newspapers have the largest online audience of any media, and online newspaper readership is growing by 17 percent each year. Contrary to popular opinion, they are one of the most successful forms of online content to date. The problem is that online newspapers are not generating enough revenue online from paying readers or from advertising. They are trying to revamp their business models to address this problem. In the past, the papers did not charge for online content, and so the content became freely available across the Web. Aggregators such as Google and Yahoo News were able to repackage this content for their viewers free of charge.

What can newspaper publishers do to stem the flow of red ink? One option is to share revenue with Internet partners such as Google and Yahoo. Another is to charge fees for newspaper content delivered to new reading devices, including smartphones, e-readers, iPads, and tablets, which enable online newspapers to be read everywhere. A third option is to charge fees for “premium” news and opinion. But because advertising remains a major source of revenue, the newspapers must clearly figure out how to grow their online revenue fast enough to offset their losses from print advertising.

The Internet has been steadily taking advertising share from other traditional media, like print newspapers and magazines. While television still dominates ad spending, the Internet now ranks second and is expected to capture a 20 percent share of marketers’ ad budgets in 2011, according to the eMarketer research firm. If this trend
continues, and there is every indication that it will, more companies will be placing ads in online newspapers, and this source of revenue should grow.

What about book publishing? Many physical bookstores have disappeared, especially small mom-and-pop stores competing against large chains such as Barnes & Noble as well as against online booksellers. The chains themselves have lost sales to online retailers such as Amazon. Book publishing is holding steady (U.S. consumers purchased 3.2 billion books in 2010) but book readership is flat. Young people are reading less than in the past while the expanding elderly population is reading more.

When e-readers were first developed and e-books first started to become popular, many analysts speculated that they would threaten the continued livelihood of the publishing industry. That has not happened. Instead, e-books have become a new channel for book content distribution. E-book sales are skyrocketing, thanks to the popularity of Amazon’s Kindle e-book reader and the iPad. What remains unanswered is whether e-books are cannibalizing sales of physical printed books or whether they are extending book readership to a larger audience.

Amazon's Kindle was the first e-reader to realize the promise of e-books. Analysts expect that Amazon will sell 17.5 million Kindles in 2011, generating $2 billion in revenue, as well as 310 million e-books, good for another $1.7 billion in revenue. Meanwhile, sales for Apple’s iPad have been so brisk that Apple called demand for the device “staggering.” The design of the iPad appeals to many readers of magazines, newspapers, and illustrated books, and publishers view the iPad as a better potential platform for textbooks than the Kindle.

Publishing companies have begun investing more resources in the Kindle and iPad as delivery platforms for their books and less money in traditional delivery platforms, like print news and bound books. Textbook publishers are working on iPad versions of their offerings; newspapers have apps out for the iPad and offer Kindle subscriptions to readers; and major publishers are contracting with software companies to convert existing files to e-reader compatible products. The publishing industry views e-books as a big potential boost to sagging sales numbers. The difficult part is developing a fee structure that will make e-book delivery profitable for publishers as well as the device manufacturers. How can publishers overcome the lower profit margins involved in selling an e-book compared to a physical book?

Amazon, Apple, Google, and a host of other smaller companies are competing with one another to offer appealing e-book delivery platforms and pricing models. Apple announced in February 2011 that it would receive a 30 percent fee for each sale of digital content sold through its App Store. Apple also prohibited app developers from placing links to external Web sites within their apps, effectively preventing these developers from guiding their app users to product offerings that would not be subject to Apple’s fees. Apple believes that because it is bringing so many new customers to the publishers on the iPad and iPhone, they have a legitimate claim to a portion of the resulting profits.

Apple also plans to prevent publishers and other content providers from receiving data about their iPad customers unless customers gives permission beforehand. Apple, meanwhile, will have access to much of this information. Publishing companies have strenuously objected, arguing that they need this information to successfully market and advertise their products. Apple says the rule protects the privacy of iPad owners.

For many publishers, removing their content from the iPad is not a realistic response to their problems with Apple’s new rules. In fact, Apple’s bargaining position is so dominant that some analysts believe there is an antitrust case to be made against them. The changes are slated to take effect later in 2011.

One company hoping to capitalize on this dissatisfaction is Google. Rather than relying on any particular e-reader or developing a device of its own, Google hopes to offer a more “open” model that allows readers to access books using any Web browser. (Kindle users can only buy books from an Amazon store and can only read those books on devices using Kindle software; the same goes for Apple and the App Store or iBooks.) Google’s advantage is that it is not tied down to any individual device, and as the number of e-readers continues to grow, this advantage will become even more significant. This model will also give Google a much larger reach. Instead of just e-reader users, Google’s target audience will be the 190 million monthly Internet users in the United States, and Google hopes to profit from the detailed information it will acquire about its e-book customers.

Google’s e-book venture, Google Editions, will allow users to buy books directly from Google or associated online retailers, including smaller, independent bookstores. When users buy a book this way, it’s added to an online library tied to a Google account, as opposed to buying from the App Store or Kindle store, where the book is tied to the device on which it was purchased.

Google has also opened a payment system for these books and other digital content that will allow publishers to keep more revenues than under Apple’s new system. This system, called Google One Pass, allows publishers to set their prices, grants publishers more control over customer data, and gives Google only a 10 percent cut of each sale. Readers using One Pass can log into their Google accounts, visit the Web sites of participating publishers, and pay for any content, any time.
So far, Germany’s largest newspaper publisher and largest magazine publisher have adopted One Pass, and other publishers in France, Spain, and the United States have followed suit. Many major U.S. publishers already have their own infrastructure to sell, fulfill, and authenticate digital subscriptions, but these publishers still want to make their publications available on Android-powered devices. Google’s offering is also far more appealing to smaller publishers and independent e-book sellers.

Other Google initiatives may work against book publishers’ interests and profits. Google Books is Google’s project to scan the world’s 150 million books and make them available via Google’s search engine. Publishers and lawmakers have raised copyright and intellectual property concerns, but a 2008 settlement allowed Google to continue scanning and did not disallow the possibility of serving ads in tandem with pages from books. A federal court overturned the 2008 ruling, but Google hopes to resolve the legal issues surrounding the project.

Companies are just starting to experiment with ways to place ads that readers will tolerate in books. Wowio, a lesser-known digital bookstore, has had success selling ad space in e-books downloaded from its site onto iPads and Kindles. The books are heavily discounted or free to readers. Wowio charges $1 to $3 for e-books with ads served in various says, and shares the revenue with publishers, who can then distribute ad revenue to their authors as they see fit. In the past, ads in books quickly became irrelevant after the book had been in circulation for a time, but with e-books, highly targeted advertisements can be inserted and replaced with ease.

Other e-book advertising possibilities include sponsorships that give readers free books; videos, graphics, and text that appear only when books are opened; and ads that appear along the border of digital pages. The popularity of e-books and e-readers has convinced advertisers to give e-book advertising a chance, but it remains to be seen whether readers will buy e-books containing ads without a significant price decrease compared to ad-free e-books.

Educators are also excited about the potential of tablets like the iPad to revolutionize learning at all levels. The iPad is portable, has a large, clear screen, a flat design that allows students to keep eye contact with their teachers, and is robust enough to handle a variety of multimedia. Schools in New York City, Chicago, California, and a host of other areas throughout the United States have launched iPad pilot programs to replace physical textbooks with electronic versions and to use this device for new interactive learning experiences. Textbook publishers are already making headway in their efforts to convert their books to iPad-compatible formats, and Houghton Mifflin Harcourt has developed the first iPad-specific algebra program, which has been used in pilot programs at several California schools.

It’s possible that instead of destroying the publishing industry, technology just might save it.


Case Study Questions

1. Evaluate the impact of the Internet on newspaper and book publishers using the value chain and competitive forces models.

2. How are newspapers and book publishers changing their business models to deal with the Internet and e-book technology?

3. How can newspaper and book publishers take better advantage of the Internet? What will it take for them to benefit from e-books? Explain your answer.

4. Will technology be able to save the newspaper and book publishing industries? Explain your answer.