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Case Study **53**

But Groupon added to its business strategy with mobile capability and new services. In February 2012, it purchased Kimia Labs, a mobile payment specialist, and Hyperpublic, a company that builds databases of local information. In May 2011, in a few cities, the company launched Groupon Now, a time-based local application that gives customers instant deals at merchants nearby using location-based software. CEO Andrew Mason told Wall Street analysts in February 2012 that he saw significant growth potential, including working on new features that will help customers personalize offers and avoid deals they don't want.

*Discussion Questions*

1. How does information technology help Groupon compete?
2. Do you agree or disagree with the statement that "Groupon has no sustainable competitive advantage?" Please explain your point of view.
3. How does Groupon add value to the companies whose offers are sold on the site?
4. What impact, if any, will Groupon Now have on Groupon's competitive position? Explain.
5. What would you advise Groupon leaders to consider as their next application?
6. Analyze the business model of Groupon using Porter's five forces model.

Sources: Adapted from <http://mashable.com/2010/08/19/gap-groupon/> (accessed February 21, 2012); <http://www.forbes.com/sites/petercohan/2011/06/06/memo-to-sec-groupon-has-no-competitive-advantage-stop-its-ipo/> (accessed February 21, 2012); <http://blogs.wsj.com/venturecapital/2010/09/29/rice-university-study-groupon-renewal-rate-not-so-hot/> (accessed February 21, 2012); [http://articles.chicagotribune.com/2011-05-18/business/ct-biz-0519-groupon-now-20110518.1\\_groupon-chief-executive-andrew-mason-first-phase](http://articles.chicagotribune.com/2011-05-18/business/ct-biz-0519-groupon-now-20110518.1_groupon-chief-executive-andrew-mason-first-phase) (accessed February 21, 2012); <http://www.reuters.com/article/2012/02/09/us-groupon-idUSTRE81727 B20120209> (accessed February 21, 2012).

**■ CASE STUDY 2-2 Zipcar**

Zipcar is an answer for customers who want to rent a car for a few hours in their home city rather than for a few days from a traditional rental agency. Car reservations are for a specific pick-up time and location around the city, often in neighborhoods so the customers need only to walk to pick up their reserved car. Customers apply for a Zipcard, which enables them to reserve a car online and unlock their car when they arrive at its location.

The company operates with a very small staff compared to traditional rental agencies. Very little human interaction is required between the customer and Zipcar for a transaction. A customer reserves a car online, enters into the reserved car by waving the RFID-enabled Zipcard against the card reader mounted behind the driver's side windshield, returns the car to the same location, and is billed on the credit card already on file. The customer can check all rental records and print receipts from the online reservation system. The system also has a color-coded time chart showing the availability and location of all rental cars in the vicinity. This transparent information exchange allows a customer to pick the car he or she wants, if available, or delay the reservation until that car is returned by another customer. Zipcar also created and installed a GPS-enabled wireless device in each car, which allows members to find and reserve a vehicle nearby using a cell phone. Customers also can use an iPhone or Android app on their iPhone or Android mobile device to find and reserve a Zipcar on a 24/7 basis. Zipcar sends text alerts near the end of the rental period, and customers can text back if they want to extend their rental time.

All cars were outfitted with patented wireless technology. Zipcar's proprietary IT platform carries information flow between customers, vehicles, and the company. It is used to monitor car security, fulfill reservations, record hourly usage, and maintain mileage information. The platform also relays vital technical information such as battery voltage and fuel level. It even informs the central system if a customer forgot to turn off headlights, which can quickly drain battery power.

This business model provides unique advantages over traditional car rentals. Customers do not have to stand in line or fill out papers to rent a car. They know exactly which make and model they will be getting. Unlike most off-airport rental agency locations, which are open only during business hours, Zipcar locations are open 24 hours. The company's rates also include the cost of gas and insurance as well as reserved parking spots at some locations.

Additionally, the company uses social networking technologies to develop an online community of Zipcar members—Zipsters. It encourages Zipsters to talk about their Ziptrips (i.e., share their personal experiences with Zipcar).

Thus, information technology is not only the key enabler of this business model but also a facilitator in creating a buzz and encouraging community development around the concept. Zipcar changed the rules of the rental car industry by

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54 Strategic Use of Information Resources

bringing the new Web 2.0 mind-set of focusing on automation, customer empowerment, transparency, and community. Zipcar is very successful; as of August 2015, its Website boasts over 900,000 paying members and renting over 10,000 vehicles in 30 major metro markets in the United States, Canada, and the United Kingdom, as well as 400 college campuses and 50 airports.

*Discussion Questions*

1. Apply the resource-based view to Zipcar's business model to show how information resources may be used to gain and sustain competitive advantage.
2. Discuss the synergy between the business strategy of Zipcar and information technology.
3. What *network effects* are part of Zipcar's strategy? How do they add value?
4. As the CEO of Zipcar, what is your most threatening competition? What would you do to sustain a competitive advantage?

Sources: Adapted from Paul Boutin, "A Self-Service Rental Car," *Businessweek* (May 3, 2006), <http://www.bloomberg.com/bw/stories/2006-05-03/a-self-service-rental-car> (accessed August 19, 2015); Mary K. Pratt, "RFID: A Ticket to Ride," *Computerworld* (December 18, 2006), <http://www.computerworld.com/article/2554153/mobile-wireless/rfid-a-ticket-to-ride.html> (accessed August 19, 2015); "Zipcar: Our Technology Downloaded," <http://www.zipcar.com/how/technology>; Zipcar: "Zipcar Overview," <http://www.zipcar.com/press/overview> (accessed August 19, 2015).

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## Strategic Use of Information Resources

chapter

2

This chapter introduces the concept of building competitive advantage using information systems-based applications. It begins with a discussion of a set of eras that describe the use of information resources historically. It then presents information resources as strategic tools, discussing information technology (IT) assets and IT capabilities. Michael Porter's Five Competitive Forces model then provides a framework for discussing strategic advantage, and his Value Chain model addresses tactical ways organizations link their business processes to create strategic partnerships. We then introduce the Piccoli and Ives's model to show how strategic advantage may be sustained in light of competitive barriers while the Resource-Based View focuses on gaining and maintaining strategic advantage through information and other resources of the firm. The chapter concludes with a brief discussion of strategic alliances, co-opetition, risks of strategic use of IT, and cocreating IT and business strategy. Just as a note: this chapter uses the terms *competitive advantage* and *strategic advantage* interchangeably.

Zara, a global retail and apparel manufacturer based in Arteixo, Spain, needed a dynamic business model to keep up with the ever-changing demands of its customers and industry. At the heart of its model was a set of business processes and an information system that linked demand to manufacturing and manufacturing to distribution. The strategy at Zara stores was simply to have a continuous flow of new products that were typically in limited supply. As a result, regular customers visited their stores often—an average of 17 times a year whereas many retail stores averaged only four times a year. When customers saw something they liked, they bought it on the spot because they knew it would probably be gone the next time they visited the store. The result was a very loyal and satisfied customer base and a wildly profitable business model.

How did Zara do it? It was possible in part because the company aligned its information system strategy with its business strategy. Its corporate Web site gave some insight:

Zara's approach to design is closely linked to our customers. A non-stop flow of information from stores conveys shoppers' desires and demands, inspiring our 200-person strong creative team.<sup>1</sup>

The entire process from factory to shop floor is coordinated from Zara's headquarters by using information systems. The point-of-sale (POS) system on the shop floor records the information from each sale, and the information is transmitted to headquarters at the end of each business day. Using a handheld device, the Zara shop managers also report daily to the designers at headquarters to let them know what has sold and what the customers wanted but couldn't find. The information is used to determine which product lines and colors should be kept and which should be altered or dropped.

<sup>1</sup> Inditex Web site, [http://www.inditex.com/en/who\\_we\\_are/concepts/zara](http://www.inditex.com/en/who_we_are/concepts/zara) (accessed February 20, 2012); <http://www.marinabaysands.com/shopping/zara.html> (accessed May 2, 2015).

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### 34 Strategic Use of Information Resources

The designers communicate directly with the production staff to plan for the incredible number of designs—more than 30,000—that will be manufactured every year.<sup>2</sup>

The shop managers have the option to order new designs twice a week using handheld computers. Before ordering, they can use these devices to check out the new designs. Once an order is received at the manufacturing plant at headquarters, a large computer-controlled piece of equipment calculates how to position patterns to minimize scrap and cut up to 100 layers of fabric at a time. The cut fabric is then sent from Zara factories to external workshops for sewing. The completed products are sent to distribution centers where miles of automated conveyor belts are used to sort the garments and recombine them into shipments for each store. Zara's Information Systems (IS) department wrote the applications controlling the conveyors, often in collaboration with vendors of the conveyor equipment.

As the Zara example illustrates, innovative use of a firm's information resources can provide it substantial and sustainable advantages over competitors. Every business depends on IS, making its use a necessary resource every manager must consider. IS also can create a strategic advantage for firms who bring creativity, vision, and innovation to their IS use. The Zara case is an example. This chapter uses the business strategy foundation from Chapter 1 to help general managers visualize how to use information resources for competitive advantage. This chapter highlights the difference between simply using IS and using IS strategically. It also explores the use of information resources to support the strategic goals of an organization.

The material in this chapter can enable a general manager to understand the linkages between business strategy and information strategy on the Information Systems Strategy Triangle. General managers want to find answers to questions such as: Does using information resources provide a sustainable and defensible competitive advantage? What tools are available to help shape strategic use of information? What are the risks of using information resources to gain strategic advantage?

## Evolution of Information Resources

The Eras model (Figure 2.1) summarizes the evolution of information resources over the past six decades. To think strategically about how to use information resources now and in the future within the firm, a manager must understand how the company arrived at where it is today. This model provides a good overview of trends and uses that have gotten the company from simple automation of tasks to extending relationships and managing their business ecosystems to where it is today.

IS strategy from the 1960s to the 1990s was driven by internal organizational needs. First came the need to lower existing transaction costs. Next was the need to provide support for managers by collecting and distributing information followed by the need to redesign business processes. As competitors built similar systems, organizations lost any advantages they had derived from their IS, and competition within a given industry once again was driven by forces that existed prior to the new technology. Most recently, enterprises have found that social IT platforms and capabilities drive a new evolution of applications, processes, and strategic opportunities that often involve an ecosystem of partners rather than a list of suppliers. **Business ecosystems** are collections of interacting participants, including vendors, customers, and other related parties, acting in concert to do business.<sup>3</sup>

In Eras I through III, the value of information was tied to physical delivery mechanisms. In these eras, value was derived from scarcity reflected in the cost to produce the information. Information, like diamonds, gold, and MBA degrees, was more valuable because it was found in limited quantities. However, the networked economy beginning in Era IV drove a new model of value—value from plenitude. **Network effects** offered a reason for value derived from plenitude: the value of a network node to a person or organization in the network increased when others joined the network. For example, an e-mail account has no value without at least one other e-mail account with which to communicate. As e-mail accounts become relatively ubiquitous, the value of having an e-mail account increases as its potential for use increases. Further, copying additional people on an e-mail is done at a very low cost (virtually zero), and the information does not wear out (although it can become obsolete). As the cost of producing an

<sup>2</sup> Shenay Kenitish, Zara (October 18, 2011), <http://uaillifemagazine.com.au/special-interest/zara/> (accessed April 10, 2012).

<sup>3</sup> For further discussion of business ecosystems, please refer to Nicholas Vitoldi and Haydee Shaughnessy, *The Elastic Enterprise* (Longhoat Key, FL: Telemachus Press, 2012).

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	Era I 1960s	Era II 1970s	Era III 1980s	Era IV 1990s	Era V 2000s	Era VI 2010+	
Primary Role of IT	Efficiency	Effectiveness	Strategy	Strategy	Value creation	Value extension	
	Automate existing paper-based processes	Solve problems and create opportunities	Increase individual and group effectiveness	Transform industry/organization	Create collaborative partnerships	Create community and social business	Connecting intelligent devices
Justify IT Expenditures	Return on investment	Increase in productivity and better decision quality	Competitive position	Competitive position	Added value	Creation of relationships	Automated information exchange
Target of Systems	Organization	Organization/Group	Individual manager/Group	Business processes	Customer/Supplier relationships	Customer/Employee/supplier ecosystem	Intelligent devices
Information Models	Application specific	Data driven	User driven	Business driven	Knowledge driven	People driven (or relationship driven)	Data exchange driven
Dominant Technology	Mainframe, "centralized intelligence"	Minicomputer, mostly "centralized intelligence"	Microcomputer, "decentralized intelligence"	Client server, "distributed intelligence"	Internet, global "ubiquitous intelligence"	Social platforms, social networks, mobile, cloud	Intelligent devices, sensors, electronics
Basis of Value	Scarcity	Scarcity	Scarcity	Plenitude	Plenitude	Hyperplenitude	
Underlying Economics	Economics of information bundled with economics of things	Economics of information bundled with economics of things	Economics of information bundled with economics of things	Economics of information separated from economics of things	Economics of information separated from economics of things	Economics of relationships bundled with economics of information	Economics of information bundled with economics of things

FIGURE 2.1 Eras of information usage in organizations.

additional copy of an information product within a network becomes trivial, the value of that network increases. Therefore, rather than using production costs to guide the determination of price, information products might be priced to reflect their value to the buyer.<sup>4</sup>

As each era begins, organizations adopt a strategic role for IS to address not only the firm's internal circumstances but also its external circumstances. Thus, in the value-creation era (Era V), companies seek those applications that again provide them an advantage over their competition and keep them from being outgunned by start-ups with innovative business models or traditional companies entering new markets. For example, companies like Microsoft, Google, Apple, and Facebook have created and maintained a competitive advantage by building technical platforms and organizational competencies that allow them to bring in partners as necessary to create new products and services for their customers. Their business ecosystems give them agility as well as access to talent and knowledge, extending the capabilities of their internal staff. Other firms simply try to solve all customer requests themselves.

Era VI has brought another paradigm shift in the use of information with an era of hyperplenitude: seemingly unlimited availability of information resources such as the Internet and processing and storage through

<sup>4</sup> Adapted from M. Broadbent, P. Weill, and D. Clair. "The Implications of Information Technology Infrastructure for Business Process Redesign," *MIS Quarterly* 23, no. 2 (1999), 163.

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### 36 Strategic Use of Information Resources

cloud computing sparked new value sources such as community and social business and the Internet of Things (connecting intelligent devices, sensors, and other electronics).

The Information System Strategy Triangle introduced in Chapter 1 reflects the linkages between a firm's IS strategy, organizational strategy, and business strategy. A link between IS strategy and business strategy focuses on the firm's external requirements whereas a link between IS strategy and organizational strategy fulfills and enhances internal requirements of the firm. Maximizing the effectiveness of the firm's business strategy requires that the general manager be able both to identify and use information resources. This chapter describes how information resources can be used strategically by general managers.

## Information Resources as Strategic Tools

Crafting a strategic advantage requires the general manager to cleverly combine all the firm's resources, including financial, production, human, and information, and to consider external resources such as the Internet and opportunities in the global arena. Information resources are more than just the infrastructure. This generic term, **information resources**, is defined as the available data, technology, people, and processes within an organization to be used by the manager to perform business processes and tasks. Information resources can either be assets or capabilities. An **IT asset** is any thing, tangible or intangible, that can be used by a firm to create, produce, and/or offer its products (goods or services). Examples of IT assets include a firm's Web site, data files, or computer equipment. An **IT capability** is something that is learned or developed over time for the firm to create, produce, or offer its products. An IT capability makes it possible for a firm to use its IT assets effectively.<sup>5</sup> The ability and knowledge to create a Web site, work with data files, and take advantage of IT equipment are examples of capabilities.

An *IS infrastructure* (a concept that is discussed in detail in Chapter 6) is an IT asset. It includes each of an information resource's constituent components (i.e., data, technology, people, and processes). The infrastructure provides the foundation for the delivery of a firm's products or services. Another IT asset is an *information repository*, which is logically related data captured, organized, and retrieved by the firm. Some information repositories are filled with internally oriented information designed to improve the firm's efficiency. Other repositories tap the external environment and contain significant knowledge about the industry, the competitors, and the customers. Although most firms have these types of information repositories, not all firms use them effectively.

In the continually expanding Web space, the view of IT assets is broadening to include potential resources that are available to the firm but that are not necessarily owned by it. These additional information resources are often available as a service rather than as a system to be procured and implemented internally. For example, Internet-based software (also called *software as a service*, or *SAAS*), such as SalesForce.com, offers managers the opportunity to find new ways to manage their customer information with an externally based IT resource. Social networking systems such as Facebook and LinkedIn offer managers the opportunity to find expertise or an entire network of individuals ready to participate in the corporate innovation processes using relatively little capital or expense.

The three major categories of IT capabilities are technical skills, IT management skills, and relationship skills. *Technical skills* are applied to designing, developing, and implementing information systems. *IT management skills* are critical for managing the IS department and IS projects. They include an understanding of business processes, the ability to oversee the development and maintenance of systems to support these processes effectively, and the ability to plan and work with the business units in undertaking change. *Relationship skills* can be focused either externally or internally. An externally focused relationship skill includes the ability to respond to the firm's market and to work with customers and suppliers. The internal relationship between a firm's IS managers and its business managers is a spanning relationship skill and includes the ability of IS to manage partnerships with the business units. Even though it focuses on relationships in the firm, it requires spanning beyond the IS department. Relationship skills develop over time and require mutual respect and trust. They, like the other information resources, can create a unique advantage for a firm. Figure 2.2 summarizes the different types of information resources and provides examples of each.

<sup>5</sup> G. Piccoli and B. Ives, "IT-Dependent Strategic Initiatives and Sustained Competitive Advantage: A Review and Synthesis of the Literature," *MIS Quarterly* 29, no. 4 (2003), 747-76.

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How Can Information Resources Be Used Strategically? 37

IT Assets	IT Capabilities
<p><b>IT Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Hardware</li> <li>• Software and company apps</li> <li>• Network</li> <li>• Data</li> <li>• Web site</li> </ul> <p><b>Information Repository</b></p> <ul style="list-style-type: none"> <li>• Customer information</li> <li>• Employee information</li> <li>• Marketplace information</li> <li>• Vendor information</li> </ul>	<p><b>Technical Skills</b></p> <ul style="list-style-type: none"> <li>• Proficiency in systems analysis</li> <li>• Programming and Web design skills</li> <li>• Data analysis/data scientist skills</li> <li>• Network design and implementation skills</li> </ul> <p><b>IT Management Skills</b></p> <ul style="list-style-type: none"> <li>• Business process knowledge</li> <li>• Ability to evaluate technology options</li> <li>• Project management skills</li> <li>• Envisioning innovative IT solutions</li> </ul> <p><b>Relationship Skills</b></p> <ul style="list-style-type: none"> <li>• Spanning skills such as business-IT relationship management</li> <li>• External skills such as vendor management</li> </ul>

**FIGURE 2.2 Information resources.**  
 Source: Adapted from G. Piccoli and B. Ives, "IT-Dependent Strategic Initiatives and Sustained Competitive Advantage: A Review and Synthesis of the Literature," *MIS Quarterly* 29, no. 4 (2005), 755.

Information resources exist in a company alongside other resources. The general manager is responsible for organizing all resources so that business goals are met. Understanding the nature of the resources at hand is a prerequisite to using them effectively. By aligning IS strategy with business strategy, the general manager maximizes the company's profit potential. To ensure that information resources being deployed for strategic advantage are used wisely, the general manager must identify what makes the information resource valuable (and the Eras model may provide some direction) and sustainable. Meanwhile, the firm's competitors are working to do the same. In this competitive environment, how should the information resources be organized and applied to enable the organization to compete most effectively?

## How Can Information Resources Be Used Strategically?

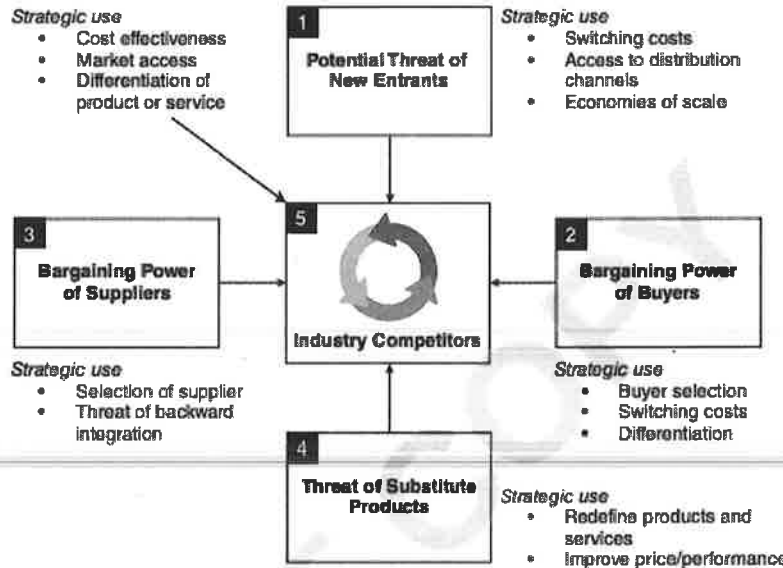
The general manager confronts many elements that influence the competitive environment of his or her enterprise. Overlooking a single element can bring about disastrous results for the firm. This slim tolerance for error requires the manager to take multiple views of the strategic landscape. Three such views can help a general manager align IS strategy with business strategy. The first view uses the *five competitive forces model* by Michael Porter to look at the major influences on a firm's competitive environment. Information resources should be directed strategically to alter the competitive forces to benefit the firm's position in the industry. The second view uses Porter's *value chain model* to assess the internal operations of the organization and partners in its supply chain. Information resources should be directed at altering the value-creating or value-supporting activities of the firm. We extend this view further to consider the value chain of an entire industry to identify opportunities for the organization to gain competitive advantage. The third view specifically focuses on the types of *IS resources* needed to gain and sustain competitive advantage. These three views provide a general manager with varied perspectives from which to identify strategic opportunities to apply the firm's information resources.

## Using Information Resources to Influence Competitive Forces

Porter provides the general manager a classic view of the major forces that shape the competitive environment of an industry, which affects firms within the industry. These five competitive forces are shown in Figure 2.3 along with some examples of how information resources can be applied to influence each force. This view reminds the general

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**38** Strategic Use of Information Resources



**FIGURE 2.3** Five competitive forces with potential strategic use of information resources.  
 Sources: Adapted from M. Porter, *Competitive Strategy* (New York: The Free Press, 1998); and Lynda M. Applegate, F. Warren McFarlan, and James L. McKenney, *Corporate Information Systems Management: The Issues Facing Senior Executives*, 4th ed. (Homewood, IL: Irwin, 1996).

manager that competitive forces result from more than just the actions of direct competitors. We explore each force in detail from an IS perspective.

**Potential Threat of New Entrants**

Existing firms within an industry often try to reduce the threat of new entrants to the marketplace by erecting barriers to entry. New entrants seem to come out of nowhere; established firms can diversify their business models and begin to compete in the space occupied by existing firms, or an enterprising entrepreneur can create a new business that changes the game for existing firms. Barriers to entry—including a firm’s controlled access to limited distribution channels, public image of a firm, unique relationships with customers, and an understanding of their industry’s government regulations—help the firm create a stronghold by offering products or services that are difficult to displace in the eyes of customers based on apparently unique features. Information resources also can be used to build barriers that discourage competitors from entering an industry. For example, Google’s search algorithm is a source of competitive advantage for the search company, and it’s a barrier of entry for new entrants that would have to create something better to compete against Google. New entrants have failed to erode Google’s market share, which holds fast at 65% in the United States and at over 90% in Europe.<sup>6</sup> Walmart, another example, effectively blocks competition with its inventory control system, which helps it drive down expenses and ultimately offer lower costs to customers. Any company entering Walmart’s marketplace would have to spend millions of dollars to build the inventory control system and IS required to provide its operations with the same capabilities. Therefore, the system at Walmart may be a barrier to entry for new companies.

Search engine optimization (actions that a firm can take to improve its prominence in search results) has served as a barrier to entry for some businesses. Consider the Web site that has the number one position in a user’s search. There is only one number one position, making it an advantage for the company enjoying that position and a barrier for all other Web sites seeking that position.

<sup>6</sup> “Viewed as a Monopoly in Europe, Google Takes on Role as a Wireless Trust-Buster in U.S.,” *New York Times* (May 8, 2015), B1, B6.

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38 Strategic Use of Information Resources

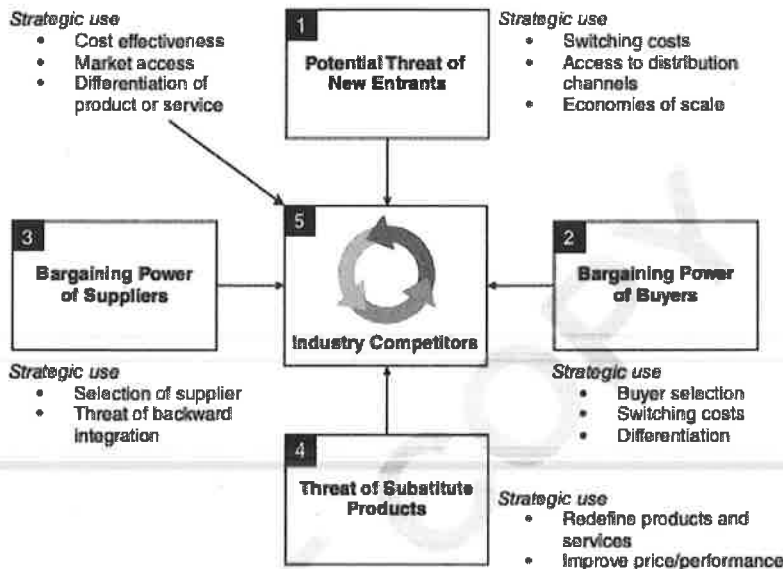


FIGURE 2.3 Five competitive forces with potential strategic use of information resources. Sources: Adapted from M. Porter, *Competitive Strategy* (New York: The Free Press, 1998); and Lynda M. Applegate, F. Warren McFarlan, and James L. McKenney, *Corporate Information Systems Management: The Issues Facing Senior Executives*, 4th ed. (Homewood, IL: Irwin, 1996).

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<sup>6</sup> “Viewed as a Monopoly in Europe, Google Takes on Role as a Wireless Trust-Buster in U.S.,” *New York Times* (May 8, 2015), B1, B6.

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### **Bargaining Power of Buyers**

Customers often have substantial power to affect the competitive environment. This power can take the form of easy consumer access to several retail outlets to purchase the same product or the opportunity to purchase in large volumes at superstores like Walmart. Information resources can be used to build switching costs that make it less attractive for customers to purchase from competitors. Switching costs can be any aspect of a buyer's purchasing decision that decreases the likelihood of "switching" his or her purchase to a competitor. Such an approach requires a deep understanding of how a customer obtains the product or service. For example, Amazon.com's patented One Click option encourages return purchases by making buying easier. Amazon.com stores buyer information, including a default credit card number, shipping method, and "ship-to" address so that purchases can be made with one click, saving consumers the effort of data reentry and further repetitive choices. Similarly, Apple's iTunes simple-to-use interface and proprietary software for downloading and listening to music makes it difficult for customers to use other formats and technologies, effectively reducing the power of the buyers, the customers.

### **Bargaining Power of Suppliers**

Suppliers' bargaining power can reduce a firm's options and ultimately its profitability. Suppliers often strive to "lock in" customers through the use of systems (and other mechanisms). For example, there are many options for individuals to back up their laptop data, including many "cloud" options. The power of any one supplier is low because there are a number of options. But Apple's operating system enables easy creation of backups and increases Apple's bargaining power. Millions of customers find it easy to use the iCloud, and they do.

The force of bargaining power is strongest when a firm has few suppliers from which to choose, the quality of supplier inputs is crucial to the finished product, or the volume of purchases is insignificant to the supplier. For example, steel firms lost some of their bargaining power over the automobile industry because car manufacturers developed technologically advanced quality control systems for evaluating the steel they purchase. Manufacturers can now reject steel from suppliers when it does not meet the required quality levels.

Through the Internet, firms continue to provide information for free as they attempt to increase their share of visitors to their Web sites and gather information about them. This decision reduces the power of information suppliers and necessitates finding new ways for content providers to develop and distribute information. Many Internet firms are integrating backward or sideways within the industry, that is, creating their own information supply and reselling it to other Internet sites. Well-funded firms simply acquire these content providers, which is often quicker than building the capability from scratch. One example of this was Amazon.com's purchase of Zappos, the shoe retailer. More recently, in 2015 LinkedIn acquired online learning company Lynda.com to add a capability to offer professional development to the company's business of networking, recruitment, and advertising.

### **Threat of Substitute Products**

The potential of a substitute product in the marketplace depends on the buyers' willingness to substitute, the relative price-to-performance ratio of the substitute, and the level of switching costs a buyer faces. Information resources can create advantages by reducing the threat of substitution. Substitutes that cause a threat come from many sources. Internal innovations can cannibalize existing revenue streams for a firm. For example, new iPhones motivate current customers to upgrade, essentially cannibalizing the older product line revenue. Of course, this is also a preemptive move to keep customers in the iPhone product family rather than to switch to another competitor's product. The threat might come from potentially new innovations that make the previous product obsolete. Tablets have reduced the market for laptops and personal computers. GPS systems have become substitutes for paper maps, digital cameras have made film and film cameras obsolete, and MP3 music has sharply reduced the market for vinyl records, record players, CDs, and CD players. Free Web-based applications are a threat to software vendors who charge for their products and who do not have Web-based delivery. Revolutions of many kinds and levels of maturity seem to be lurking everywhere. Cloud services are a substitute for data centers. Uber offers a substitute for taxicabs. Managers must watch for potential substitutes from many different sources to fully manage this competitive threat.

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**40** Strategic Use of Information Resources

**Industry Competitors**

Rivalry among the firms competing within an industry is high when it is expensive for a firm to leave the industry, the growth rate of the industry is declining, or products have lost differentiation. Under these circumstances, the firm must focus on the competitive actions of rivals to protect its own market share. Intense rivalry in an industry ensures that competitors respond quickly to any strategic actions. Facebook enjoys a competitive advantage in the social networking industry. Other sites have tried to compete with Facebook by offering a different focus, either a different type of interface or additional ways to network. Competition is fierce and many start-ups hope to “be the next Facebook.” However, Facebook continues to lead the industry, in part by continued innovation and in part by its huge customer base, which continues to raise the bar for competitors.

The processes that firms use to manage their operations and to lower costs or increase efficiencies can provide an advantage for cost-focus firms. However, as firms within an industry begin to implement standard business processes and technologies—often using enterprise-wide systems such as those of SAP and Oracle—the industry becomes more attractive to consolidation through acquisition. Standardizing IS lowers the coordination costs of merging two enterprises and can result in a less competitive environment in the industry.

One way competitors differentiate themselves with an otherwise undifferentiated product is through creative use of IS. Information provides advantages in such competition when added to an existing product. For example, the iPod, iPhone, iPad, and iWatch are differentiated in part because of the iTunes store and the applications available only to users of these devices. Competitors offer some of the same information services, but Apple was able to take an early lead by using information systems to differentiate their products. Credit card companies normally compete on financial services such as interest rate, fees, and payment period. But Capital One differentiated its credit cards by adding information to its services; it provided customers their credit scores.

Each of the competitive forces identified by Porter’s model is acting on firms at all times, but perhaps to a greater or lesser degree. There are forces from potential new entrants, buyers, sellers, substitutes, and competitors at all times, but their threat varies. Consider Zara, the case discussed in at the beginning of this chapter. See Figure 2.4 for a summary of these five forces working simultaneously at the retailer and manufacturer.

General managers can use the five competitive forces model to identify the key forces currently affecting competition, to recognize uses of information resources to influence forces, and to consider likely changes in these forces

Competitive Force	IT Influence on Competitive Force
Threat of New Entrant	Zara’s IT supports its tightly knit group of designers, market specialists, production managers, and production planners. New entrants are unlikely to be able to provide IT to support such relationships that have been built over time at Zara. Further, it has a rich information repository about customers that would be hard to replicate.
Bargaining Power of Buyers	Recently, Zara has employed laser technology to measure 10,000 women volunteers so that it can add the measurements of “real” customers into its information repositories. This means that the new products will be more likely to fit Zara customers.
Bargaining Power of Suppliers	Its computer-controlled cutting machine cuts up to 1,000 layers at a time. A large number of sellers are available for the simple task of sewing the pieces together. Zara has great flexibility in choosing the sewing companies.
Industry Competitors	Zara tracks breaking trends and focuses on meeting customer preferences for trendy, low-cost fashion. The result is the highest sales per square foot in its industry, virtually no advertising, only 10% of stock remaining unsold, very low inventory levels, new products offered in 15 days from idea to shelves, and extremely efficient manufacturing and distribution operations.
Threat of Substitute Products	IT helps Zara offer extremely fashionable lines that are expected to last for approximately 10 wears. IT enables Zara to offer trendy, appealing apparel at hard-to-beat prices, making substitutes difficult.

FIGURE 2.4 Application of five competitive forces model for Zara.

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over time. The changing forces drive both the business strategy and IS strategy, and this model provides a way to think about how information resources can create competitive advantage for a business unit and, even more broadly, for the firm. The forces also can reshape an entire industry—compelling general managers to take actions to help their firm gain or sustain competitive advantage.

### Using Information Resources to Alter the Value Chain

A second lens for describing the strategic use of information systems is Porter's value chain. The value chain model addresses the activities that create, deliver, and support a company's product or service. Porter divided these activities into two broad categories (Figure 2.5): support and primary activities. Primary activities relate directly to the value created in a product or service whereas support activities make it possible for the primary activities to exist and remain coordinated. Each activity may affect how other activities are performed, suggesting that information resources should not be applied in isolation. For example, more efficient IS for repairing a product may increase the possible number of repairs per week, but the customer does not receive any value unless his or her product is repaired, which requires that the spare parts be available. Changing the rate of repair also affects the rate of spare parts ordering. If information resources are focused too narrowly on a specific activity, then the expected value may not be realized because other parts of the chain have not adjusted.

The value chain framework suggests that competition stems from two sources: lowering the cost to perform activities and adding value to a product or service so that buyers will pay more. To achieve true competitive advantage, a firm requires accurate information on elements outside itself. Lowering activity costs achieves an advantage only if the firm possesses information about its competitors' cost structures. Even though reducing isolated costs can improve profits temporarily, it does not provide a clear competitive advantage unless the firm can lower its costs below a competitor's. Doing so enables the firm to lower its prices as a way to grow its market share.

For example, many Web sites sell memory to upgrade laptops. But some sites, such as crucial.com, have an option that automates the process prior to the sales process. These sites have the "Crucial System Scanner Tool," which scans the customer's laptop, identifies the current configuration and the capacity, and then suggests compatible memory upgrade kits. The customer uses the scanner, which identifies the configuration of the laptop, and automatically opens a Web page with the appropriate memory upgrades. The customer does not have to figure out the configuration or requirements; it's done automatically. By combining a software program like its configurator with the sales process, crucial.com has added value to the customer's experience by automating a key process.

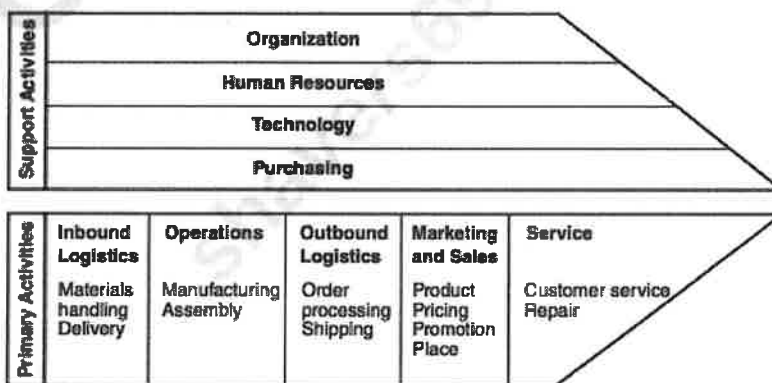


FIGURE 2.5 Value chain of the firm. Source: Adapted from Michael Porter and Victor Millar, "How Information Gives You Competitive Advantage," *Harvard Business Review* (July–August 1985), reprint no. 85415.

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42 Strategic Use of Information Resources

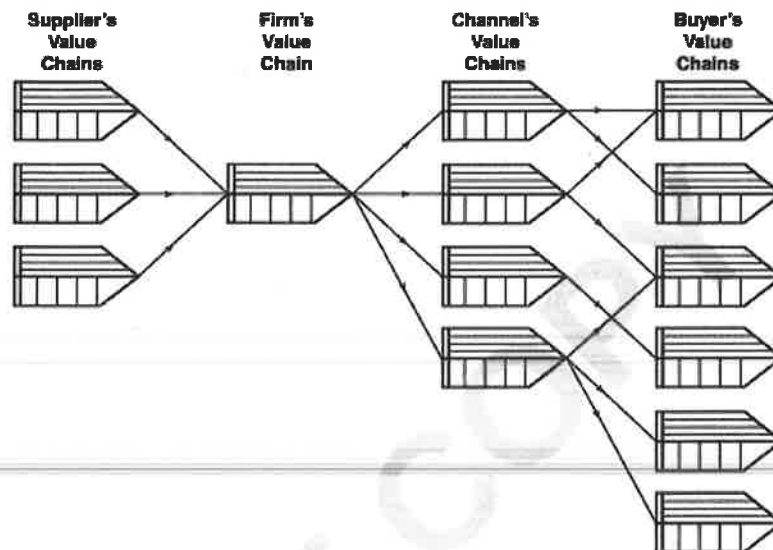


FIGURE 2.6 The value system: Interconnecting relationships between organizations.

Although the value chain framework emphasizes the activities of the individual firm, it can be extended, as in Figure 2.6, to include the firm in a larger value system. This value system is a collection of firm value chains connected through a business relationship and through technology. From this perspective, a variety of strategic opportunities exist to use information resources to gain a competitive advantage. Understanding how information is used within each value chain of the system can lead to new opportunities to change the information component of value-added activities. It can also lead to shakeouts within the industry as firms that fail to provide value are forced out and as surviving firms adopt new business models.

Opportunity also exists in the transfer of information across value chains. For example, sales forecasts generated by a manufacturer, such as a computer or automotive company, and linked to supplier systems create orders for the manufacture of the necessary components for the computer or vehicle. Often this coupling is repeated from manufacturing company to vendor/supplier for several layers, linking the value chains of multiple organizations. In this way, each member of the supply chain adds value by directly linking the elements of its value chains to others.

Optimizing a company's internal processes, such as its supply chain, operations, and customer relationship processes, can be another source of competitive advantage. Tools are routinely used to automate the internal operations of a firm's value chain, such as **supply chain management (SCM)** to source materials for operations, **enterprise resource planning (ERP)** systems to automate functions of the operations activities of the value chain, and **customer relationship management (CRM)** systems to optimize the processing of customer information. These systems are discussed in more detail in Chapter 5.

In an application of the value chain model to the Zara example discussed earlier, Figure 2.7 describes the value added to Zara's primary and support activities provided by information systems. The focus in Figure 2.7 is on value added to Zara's processes, but suppliers and customers in its supply chain also realize the value added by information systems. Most notably, the customer is better served as a result of the systems. For example, the stores place orders twice a week over personal digital assistants (PDAs). Each night, managers use their PDAs to learn about newly available garments. The orders are received and promptly processed and delivered. In this way, Zara can be very timely in responding to customer preferences.

Unlike the five competitive forces model, which focuses on industry dynamics, the focus of the value chain is on the firm's activities. Yet, using the value chain as a lens for understanding strategic use of information resources affects competitive forces because technology innovations add value to suppliers, customers, or even competitors and potential new entrants.

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Activity	Zara's Value Chain
<b>Primary Activities</b>	
Inbound Logistics	IT-enabled just-in-time (JIT) strategy results in inventory being received when needed. Most dyes are purchased from its own subsidiaries to better support JIT strategy and reduce costs. Many suppliers are located near its production facilities.
Operations	Information systems support decisions about the fabric, cut, and price points. Cloth is ironed and products are packed on hangers so they don't need ironing when they arrive at stores. Price tags are already on the products. Zara produces 60% of its merchandise in house. Fabric is cut and dyed by robots in 23 highly automated Spanish factories.
Outbound Logistics	Clothes move on miles of automated conveyor belts at distribution centers and reach stores within 48 hours of the order.
Marketing and Sales	Limited inventory allows low percentage of unsold inventory (10%); POS at stores linked to headquarters track how items are selling; customers ask for what they want, and this information is transmitted daily from stores to designers over handheld computers.
Service	No focus on service on products.
<b>Support Activities</b>	
Organization	IT supports tightly knit collaboration among designers, store managers, market specialists, production managers, and production planners.
Human Resources	Managers are trained to understand what's selling and report data to designers every day. The manager is key to making customers feel listened to and to communicating with headquarters to keep each store and the entire Zara clothing line at the cutting edge of fashion.
Technology	Technology is integrated to support all primary activities. Zara's IT staff works with vendors to develop automated conveyors to support distribution activities.
Purchasing	Vertical integration reduces amount of purchasing needed.

FIGURE 2.7 Application of value chain model to Zara.

## Sustaining Competitive Advantage

It might seem obvious that a firm would try to sustain its competitive advantage. After all, the firm might have worked very hard to create advantages, such as those previously discussed. However, there is some controversy about trying to sustain a competitive advantage.

On one side are those who warn of hypercompetition as discussed in Chapter 1.<sup>3</sup> In an industry facing hypercompetition, recall that trying to sustain an advantage can be a deadly distraction. Consider the banking industry as a good example that has undergone much change over the past five decades. In the 1960s, people needed to visit a physical bank for all transactions, including withdrawing from or depositing to their accounts and transferring among accounts. In the 1970s, some banks took a chance and invested in automated teller machines (ATMs) and were among the innovators in the industry. In the 1980s, some banks pioneered "bank-by-phone" services that enabled customers to pay bills by phone, attempting to establish competitive advantage with technology. In the late 1990s, Web sites served to augment banking services, and "bank-by-web" was the new, exciting way to compete. Most recently, many banks are providing mobile banking, enabling customers to make deposits by using their smartphone camera to take photos of checks that previously needed to be turned in physically. Then the checks can be destroyed.

The obvious picture to paint here is that competitors caught up with the leaders very quickly, and competitive advantage was brief. When ATMs were introduced, it did not take long for others to adopt the same technology. Even small banks found that they could band together with competitors and invest in the same technologies. The same imitation game took place with "bank by phone," "bank by Web," and mobile banking.

More interestingly, what sounds like an exciting way to show off the power of technology can also be interpreted as a way to increase the cost of doing business. Although some investments, such as using ATMs to replace tellers, lowered costs, other investments raised costs (such as needing to offer phone, Web, and mobile banking options to customers).

<sup>3</sup> Don Goeltz, "Hypercompetition," vol. 1 of *The Encyclopedia of Management Theory*, ed. Eric Kessler (Los Angeles: Sage, 2013), 359–60.

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44 Strategic Use of Information Resources

Barrier	Definition	Examples
IT project barrier	It would be a large undertaking for a competitor to build the system to copy the capability.	<ul style="list-style-type: none"> <li>• Requires a large investment</li> <li>• Requires a long time to build</li> <li>• Complicated to build</li> </ul>
IT assets and capabilities barrier	Competitors might lack the IT resources to copy the capability.	<ul style="list-style-type: none"> <li>• Database of customers that cannot be copied</li> <li>• Expert developers or project managers</li> </ul>
Complementary resources barrier	The firm has other resources that create a synergy with the IT that provides competitive advantage.	<ul style="list-style-type: none"> <li>• Respected brand</li> <li>• Partnership agreements</li> <li>• Exclusivity arrangements</li> <li>• Good location</li> </ul>
Preemption barrier	The firm "got there first."	<ul style="list-style-type: none"> <li>• Loyal customer base built at the beginning</li> <li>• Firm known as "the" source</li> </ul>

FIGURE 2.8 Barriers to competition and building sustainability.

Rather than arguing that sustaining a competitive advantage is a deadly distraction, Piccoli and Ives<sup>8</sup> provide a framework that outlines the ways in which a firm can provide barriers to competitors, which would build sustainability. The framework outlines four types of barriers: IT project barrier, IT resources and capabilities barrier, complementary resources barrier, and preemption barrier. See Figure 2.8 for a brief definition and a few examples of each.

So, should a firm focus attention on building barriers to the competition, or should it just give up on the established competitive advantage and focus on seeking the next revolution? Given that some technologies can be copied quickly, or even just purchased from the same well-known vendor who supplied it to the leader, it seems prudent to spend some time to explore each technological option in the Piccoli and Ives' framework and determine where the firm can increase sustainability. If the project is rather small, then the firm should focus on the other three barriers. If the firm can build loyalty with customers who appreciate innovation, a two-month competitive advantage might turn into a two-year or longer advantage (thus building a preemption barrier). If a firm can capture valuable data right at the beginning, a copycat firm may fall further behind. Also, building partnerships or securing exclusive rights to some of the technologies can further slow down a competitor.

It would not be wise to stop there, however. The firm should continue to seek ways in which IT can improve offerings or service to customers. And the firm should go beyond those steps, focusing on how it might change its entire industry. One example is the way in which Netflix continued to speed its DVD delivery service while focusing on movie streaming, a technology that will someday make the delivery service obsolete. Netflix was more than aware that its revenue was falling every quarter, but it expected and embraced the shortfall with its strategic move into streaming.<sup>9</sup> Given that other services such as Amazon and many cable companies had begun streaming, Netflix has created original series offerings such as *House of Cards* and *Orange Is the New Black*.

Therefore, a firm might (1) seek ways to build sustainability by looking into each of the four potential barriers to identify promising ways to block the competition and at the same time (2) continue to innovate and change the industry. Netflix has done both by building a dependable and efficient mailing business and creating new business models such as streaming and series production. Focusing only on building sustainability has the potential effect of fighting a losing battle, and focusing only on new business models might be too risky as the sole source of growth. The last strategic framework, resource-based view, is more general and emphasizes ways in which to exploit its many potential resources. The framework, described next, can be helpful for sustaining and creating competitive advantage.

<sup>8</sup> Piccoli and Ives, "IT-Dependent Strategic Initiatives and Sustained Competitive Advantage," 755.

<sup>9</sup> Greg Sandoval, "Netflix CEO, DVD Subscribers to Decline Now and Forever," *CNET*, <http://www.cnet.com/news/netflix-ceo-dvd-subscribers-to-decline-now-and-forever> (accessed August 19, 2015).

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## Using the Resource-Based View (RBV)

A fourth framework, the **resource-based view (RBV)**,<sup>10</sup> is useful for determining whether a firm's strategy has created value by using IT. Like the value chain model, the RBV concentrates on areas that add value to the firm. Whereas the value chain model focuses on a firm's activities, the resource-based view focuses on the resources that it can manage strategically in a rapidly changing competitive environment. Like the Piccoli and Ives framework, the RBV focuses on sustaining competitive advantage but through use of resources rather than by raising competitive barriers.

The RBV has been applied in the area of IS to help identify two types of information resources: those that enable a firm to *attain* competitive advantage and those that enable a firm to *sustain* the advantage over the long term. From the IS perspective,<sup>11</sup> some types of resources are better than others for creating attributes that enable a firm to attain competitive advantage (i.e., value, rarity) whereas other resources are better for creating attributes to sustain competitive value (e.g., low substitutability, low mobility, low imitability).

### Resources to Attain Competitive Advantage

Valuable and rare resources that firms must leverage to establish a superior resource position help companies attain competitive advantage. A resource is considered valuable when it enables the firm to become more efficient, effective, or innovative. It is a rare resource when other firms do not possess it. For example, many banks today would not think of doing business without a mobile banking app. Mobile banking apps are very valuable to the banks in terms of their operations. A bank's customers expect it to provide a mobile banking app that can be used on any mobile device. However, because many other banks also have mobile banking apps, they are not a rare resource, and they do not offer a strategic advantage. Some call them *table stakes* or resources required just to be in the business. Many systems in Eras I and II, and especially Era III, were justified on their ability to provide a rare and valuable resource. In some cases these very systems have become table stakes.

### Resources to Sustain Competitive Advantage

Many firms that invested in systems learned that gaining a competitive advantage does not automatically mean that they could sustain it over the long term. The only way to do that is to continue to innovate and to protect against resource imitation, substitution, or transfer. For example, Walmart's complex logistics management is deeply embedded in both its own and its suppliers' operations so that imitations by other firms is unlikely. The Oakland Athletics' use of information systems propelled it to victory, as depicted in the movie *Moneyball*, but as soon as other teams learned about the secret behind the success Oakland was having with analytics and information systems, they, too began to use similar techniques, reducing the advantage Oakland initially enjoyed. Finally, to sustain competitive advantage, resources must be difficult to transfer or replicate, or relatively immobile. Some information resources can be easily bought. However, technical knowledge—especially that which relates to a firm's operation—an aggressive and opportunistic company culture, deep relationships with customers, and managerial experience in the firm's environment is less easy to obtain and, hence, considered harder to transfer to other firms.

Some IT management skills are general enough in nature to make them easier to transfer and imitate. Although it clearly is important for IS executives to manage internally oriented resources such as IS infrastructure, systems development, and running cost-effective IS operations, these skills can be acquired in many different forms. They are basic IT management skills possessed by virtually all good IS managers. Other skills, however, are unique to a firm and require considerable time and resources to develop. For example, it takes time to learn how the firm operates and to understand its critical processes and socially complex working relationships. However, the message suggested by the RBV is that IS executives must look beyond their own IS shop and concentrate on cultivating resources

<sup>10</sup> The resource-based view was originally proposed by management researchers, most prominently Jay Barney, "Firm Resources and Sustained Competitive Advantage," *Journal of Management* 17, no. 1 (1991), 99–120 and "Is the Resource-Based 'View' a Useful Perspective for Strategic Management Research? Yes," *Academy of Management Review* 26, no. 1 (2001), 41–56; M. Wade and J. Hulland, "Review: The Resource-Based View and Information Systems Research: Review, Extension and Suggestions for Future Research," *MIS Quarterly* 28, no. 1 (2004), 107–42. This article reviewed the resource-based view's application in the MIS literature and derived a framework to better understand its application to IS resources.

<sup>11</sup> [http://www.minonline.com/best\\_of\\_web/Best-of-the-Web-CommunitySocial-Networking\\_10185.html](http://www.minonline.com/best_of_web/Best-of-the-Web-CommunitySocial-Networking_10185.html) (accessed January 1, 2012).

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**46 Strategic Use of Information Resources**

that help the firm understand changing business environments and allow it to work well with all its external stakeholders. Even when considering internally oriented information resources, there are differences in the extent to which these resources add value. Many argue that IS personnel are willing to move, especially when offered higher salaries by firms needing these skills. Yet, some technical skills, such as knowledge of a firm's use of technology to support business processes, and technology integration skills are not easily exported to, or imported from, another firm. Further, hardware and many software applications can be purchased or outsourced, making them highly imitable and transferrable. Because it is unlikely that two firms have exactly the same strategic alternatives, resources at one firm might have only moderate substitutability in the other firm.

**Zara and RBV**

Figure 2.9 indicates the extent to which the attributes of each information resource may add value to Zara, the company discussed earlier in the chapter. Zara's advantage did not come from the specific hardware or software technologies it employed. Its management spent five to ten times less on technology than its rivals. In contrast,

Resource/Attribute	Value Creation		Value Sustainability		
	Value	Rarity	Imitation	Substitution	Transfer
<b>IT ASSET</b>					
IT Infrastructure	<b>Moderate</b> because of its skillful use of the POS equipment, handheld computers, automated conveyors, and computer-controlled equipment to cut patterns, but similar technology could be purchased and used by competitors		<b>Easy</b> to imitate and transfer its infrastructure <b>Moderate</b> for substitution of infrastructure (automated conveyers)		
Information Repository	<b>High value</b> and rarity because of its information about customers' preferences and body types, which Zara leverages strategically; well integrated with Zara's operations and personnel; retail information analyzed by designers to identify future products		<b>Difficult</b> to imitate and transfer <b>Extremely difficult</b> to substitute because of the volume and nature of the data		
<b>IT CAPABILITY</b>					
Technical Skills	<b>Low value/rarity</b> because IS professionals could be hired relatively easily to perform the technical work		<b>Moderately difficult</b> to imitate, substitute, or transfer; some sustainability results because the skills are used to integrate across a range of systems		
IT Management Skills	<b>High value/rarity</b> because they were acquired over time		<b>Difficult</b> to imitate, substitute, or transfer; resources leveraged well		
Relationship Skills— <i>Externally Focused</i>	<b>High value</b> from relationships with European manufacturers <b>Moderate</b> rarity because other companies also have relationships with manufacturers although required time to develop the relationship		<b>Difficult</b> to imitate, substitute, or transfer; turnaround time of under 5 weeks from conception to distribution		
Relationship Skills— <i>Spanning</i>	<b>High</b> rarity of spanning		<b>Difficult</b> to imitate, substitute, or transfer spanning; unusual tight-knit teams at headquarters not easy to imitate or purchase in the marketplace, allowing the ability to correctly interpret and quickly respond to customer needs		

**FIGURE 2.9** Information resources at Zara, by attribute.  
Source: Based on M. Wade and J. Hulland, "The Resource-Based View and Information Systems Research: Review, Extension and Suggestions for Future Research," *MIS Quarterly* 28, no. 1 (2004), 107-42.

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### ≡ Social Business Lens: Social Capital

A management theory that is gaining in popularity as a tool in understanding a social business is the social capital theory. **Social capital** is the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Relationships associated with networks have the potential of being a valuable resource for businesses. The theory's focus is not on managing individuals but on managing relationships.

The value from networks may be derived in one of three interrelated ways: structural, relational, and cognitive. The *structural* dimension is concerned with the pattern of relationships in the network—who is connected to whom. The *relational* dimension looks at the nature of relationships among members in the network (i.e., respect, friendship)—how the connected people interact. The third *cognitive* dimension looks at the way people think about things in the network, in particular whether they have a shared language, system of meanings or interpretations—how the connected people think. The unusual thing about social capital is that no one person owns it. Rather, the people in the relationship own it jointly. Thus, it can't be traded easily, but it can be used to do certain things more easily. In particular, in social business applications, social capital may make it easier to get the information needed to perform a task or connect with certain key people. In IS development teams, social capital may improve the willingness and ability of team members to coordinate their tasks in completing a project.

Source: J. Nahapiet and S. Ghosal, "Social Capital, Intellectual Capital and the Organizational Value," *Academy of Management Review*, 23, no. 2 (1998), 242-66.

Zara has created considerable value from the other information asset—its valuable information repository with customers' preferences and body types.

In terms of information capability, much of Zara's value creation is from its valuable and rare IT management skills. Zara's relationship skills also serve as a tool for value creation and sustainability. Overall, Zara is able to create high value from its IT management and relationship skills. It would be moderately to extremely difficult to substitute, imitate, or transfer them.

The resource-based theory, although highly cited, has received its share of criticism.<sup>12</sup> The major criticism is that it doesn't clearly distinguish between value and strategic competitive advantage. Another criticism of the original theory is that it doesn't consider different types of resources. However, IS researchers addressed this concern when they categorized resources into assets and capabilities and then provided examples of each. In applying the theory, it is important to recognize that it is focused on internal sources of a firm's competitive advantage and, thus, does not thoroughly take into account the environment in which the firm is embedded, especially when the environment is quite dynamic.

Most firms don't really have a choice of creating competitive advantage by manipulating industry forces either through their use of information resources or IT-enhanced activities. Yet, like Zara, they can leverage the IT resources they do have to create and sustain strategic value for their firms.

## Strategic Alliances

The value chain helps a firm focus on adding value to the areas of most value to its partners. The resource-based view suggests adding value using externally oriented relationship skills. The Eras framework emphasizes the importance of collaborative partnerships and relationships. The increasing number of Web applications focused on collaboration and social networking only foreshadow even more emphasis on alliances. These relationships can take many forms, including joint ventures, joint projects, trade associations, buyer-supplier partnerships, or cartels. Often such partnerships use information technologies to support strategic alliances and integrate data across

<sup>12</sup> For an excellent discussion of criticisms of the resource-based view, see J. Kraaijenbrink, J-C Spender, and A. J. Groen "The Resource-Based View: A Review and Assessment of Its Critiques," *Journal of Management*, 36, no. 1, (2010), 349-72.

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#### 48 Strategic Use of Information Resources

partners' information systems. A **strategic alliance** is an interorganizational relationship that affords one or more companies in the relationship a strategic advantage. An example is the strategic alliance between game maker Zynga and Facebook. As documented in Facebook's IPO filing in January 2012, the relationship is a mutually beneficial one. Zynga developed some of the most popular games found on Facebook, including Mafia Wars, Farmville, and WordsWithFriends. Facebook has exclusive rights to Zynga's games, many of which have generated thousands of new members for Facebook. It also gained access to Zynga's customer database. The alliance generates significant revenue for both parties because players of these games purchase virtual goods with real money and Zynga purchases significant advertising space from Facebook to promote its games. Zynga benefits from the revenue resulting from its gamers on Facebook community.<sup>13</sup>

Business ecosystems are often groups of strategic alliances in which a number of partners provide important services to each other and jointly create value for customers. The Facebook ecosystem could be said to include many of the companies that use that platform to deliver their apps, that allow customers to post directly on their Facebook page from the app, or that allow customers to log on to their site using their Facebook account. This adds value for customers by providing greater convenience, and by offering the ability to automatically update their activity stream with information from the app, and both Facebook and the app provider benefit from their alliance.

IS often provides the platform upon which a strategic alliance functions. Technology can help produce the product developed by the alliance, share information resources across the partners' existing value systems, or facilitate communication and coordination among the partners. Because many services are information based today, an IS platform is used to deliver these services to customers. The Facebook–Zynga alliance is an example of this type of IS platform. Further, linking value chains through supply chain management (SCM) is another way that firms build an IT-facilitated strategic alliance.

### Co-opetition

Clearly, not all strategic alliances are formed with suppliers or customers as partners. Rather, co-opetition is an increasingly popular alternative model. As defined by Brandenburg and Nalebuff in their book of the same name, **co-opetition** is a strategy whereby companies cooperate and compete at the same time with companies in their value net.<sup>14</sup> The value net includes a company and its competitors and complementors as well as its customers and suppliers and the interactions among all of them. A **complementor** is a company whose product or service is used in conjunction with a particular product or service to make a more useful set for the customer. For example, Goodyear is a complementor to Ford and GM because tires are a complementary product to vehicles. Likewise, Amazon is a complementor to Apple in part because the Amazon reading application, the Kindle, the reading tablet that Amazon sells, is one of the most popular apps for the iPad. Finally, a cellular service is a complementor to Google's search engine because the service allows more consumers to use Google's search function.

Co-opetition, then, is the strategy for creating the best possible outcome for a business by optimally combining competition and cooperation. It can also be used as a strategy for sourcing as discussed in Chapter 10. It frequently creates competitive advantage by giving power in the form of information to other organizations or groups. For example, Covisint.com hosts the auto industry's e-marketplace, which grew out of a consortium of competitors, including General Motors, Ford, DaimlerChrysler, Nissan, and Renault. By addressing multiple automotive functional needs across the entire product life cycle, Covisint offers support for collaboration, supply chain management, procurement, and quality management. Covisint.com has extended this business-to-partner platform to other industries including health care, manufacturing, life sciences, food and beverage, and oil and gas. Thus, co-opetition as demonstrated by Covisint not only streamlines the internal operations of its backers but also has the potential to transform an industry.

<sup>13</sup> Adapted from N. Wingfield, "Virtual Products, Real Profits" *The Wall Street Journal* (September 9, 2011), A1, 16; L. B. Baker, "Zynga's Sales Soar on Facebook Connection," *Reuters News* (February 2, 2012), <http://www.reuters.com/article/2012/02/02/us-zynga-shares-idUSTRE8111PO20120202> (accessed September 14, 2015); Jackie Cohen, "So Much for the Facebook Effect: Zynga Sees \$978.6 Million Loss In 2011," *Yahoo News* (February 14, 2012), <http://www.allfacebook.com/facebook-zynga-eps-2012-02> (accessed February 20, 2012).

<sup>14</sup> A. Brandenburg and B. Nalebuff, *Co-opetition* (New York: Doubleday, 1996).

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## Risks

As demonstrated throughout this chapter, information resources may be used to gain strategic advantage even if that advantage is fleeting. When information systems are chosen as the tool to outpace a firm's competitors, executives should be aware of the many risks that may surface. Some of these risks include the following:

- *Awakening a sleeping giant:* A firm can implement IS to gain competitive advantage only to find that it nudged a larger competitor with deeper pockets into implementing an IS with even better features. FedEx offered its customers the ability to trace the transit and delivery of their packages online. FedEx's much larger competitor, UPS, rose to the challenge. UPS not only implemented the same services but also added a new set of features eroding some of the advantages FedEx enjoyed, causing FedEx to update its offerings. Both the UPS and FedEx sites passed through multiple Web site iterations as the dueling delivery companies continue to struggle for competitive advantage.
- *Demonstrating bad timing:* Sometimes customers are not ready to use the technology designed to gain strategic advantage. For example, Grid Systems created the GRiDPAD in 1989. It was a tablet computer designed for businesses to use in the field and was well reviewed at that time. But it didn't get traction. Three decades later, in 2010, Apple introduced the iPad, and tablet computing took off.
- *Implementing IS poorly:* Stories abound of information systems that fail because they are poorly implemented. Typically, these systems are complex and often global in their reach. An implementation fiasco took place at Hershey Foods when it attempted to implement its supply and inventory system. Hershey developers brought the complex system up too quickly and then failed to test it adequately. Related systems problems crippled shipments during the critical Halloween shopping season, resulting in large declines in sales and net income. More recently, in 2012, more than 100,000 Austin Energy customers received incorrect utility bills due to problems with the company's vendor-supplied bill collection system. Some customers went months without a bill, and others were incorrectly billed. Some businesses that owed \$3,000 were billed \$300,000. Still others tried to pay their bill online only to be told that the payment had not recorded when it had been. The utility calculated that the problems cost it more than \$8 million.<sup>15</sup>
- *Failing to deliver what users want:* Systems that do not meet the needs of the firm's target market are likely to fail. For example, in 2011, Netflix leadership divided the company into two, calling the DVD-rental business Qwikster and keeping the streaming business under Netflix. But customers complained, and worse, closed their accounts, and less than a month later, Qwikster was gone. Netflix reunited both businesses under the Netflix name.<sup>16</sup>
- *Running afoul of the law:* Using IS strategically may promote litigation if the IS results in the violation of laws or regulations. Years ago, American Airlines' reservation system, Sabre, was challenged by the airline's competitors on the grounds that it violated antitrust laws. More recently, in 2010, Google said it was no longer willing to adhere to Chinese censorship. The Chinese government responded by banning searching via all Google search sites (not only google.cn but all language versions, e.g., google.co.jp, google.com.au), including Google Mobile. Google then created an automatic redirect to Google Hong Kong, which stopped June 30, 2010, so that Google would not lose its license to operate in China. Today, Google, Inc. is acting in compliance with the Chinese government's censorship laws and Chinese users of Google.cn see filtered results as before. More recently, European antitrust officials claimed that Google's search engine unfairly generates results that favor its shopping sites over those of its competitors and that its Android mobile phone operating system unfairly features Google as the default search engine.<sup>17</sup>

<sup>15</sup> Marty Toohey, "More Than 100,000 Austin Energy Customers Hit by Billing Errors from \$55 Million IBM System," *Statesman* (February 18, 2012), <http://www.statesman.com/news/local/more-than-100-000-austin-energy-customers-hit-2185031.html> (accessed February 20, 2012).

<sup>16</sup> Qwikster = Gonster (October 10, 2011), <http://www.breakingcopy.com/netflix-kills-qwikster> (accessed February 20, 2012).

<sup>17</sup> "Viewed as a Monopoly in Europe, Google Takes on Role as a Wireless Trust-Buster in U.S.," *The New York Times* (May 8, 2015), B1, B6.

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### Geographic Box: Mobile-Only Internet Users Dominate Emerging Countries

More than 25% of mobile Web users in emerging markets connect to the Internet solely through mobile devices. This is the case for 70% of mobile Web users in Egypt, 59% in India, and 50% in Nigeria but only for 25% of U.S. and 22% of U.K. mobile Web users. Malaysia is emerging as a test case for a mobile-only Internet. It has rolled out a next-generation, high-speed broadband network that covers most of its population. This infrastructure makes it possible to make video calls with Apple's FaceTime application in locations throughout the country using a tiny pocket router that accesses a WiMAX wireless-broadband network set up by a local conglomerate, YTL Corp. Bhd. To further encourage the spread of Internet, Malaysia's leaders have pledged not to censor the Internet.

Sources: G. Dinaway, "Mobile-Only Internet Users Dominate Emerging Markets" Adotas.com (October 24, 2011), <http://www.adotas.com/2011/10/mobile-only-internet-users-dominate-emerging-markets/> (accessed August 19, 2015); J. Hookway, "Broadband in the Tropics," *The Wall Street Journal* (September 21, 2011), B6.

Every business decision has risks associated with it. However, with the large expenditure of IT resources needed to create sustainable, strategic advantages, the manager should carefully identify and then design a mitigation strategy to manage the associated risks.

## Co-Creating IT and Business Strategy

This chapter has discussed the alignment of IT strategy with business strategy. Certainly, the two strategies must be carefully choreographed to ensure receiving maximum value from IT investments and obtaining the maximum opportunity to achieve the business strategy. However, in the fast-paced business environment where information is increasingly a core component of the product or service offered by the firm, managers must co-create IT and business strategy. That is to say that IT strategy *is* business strategy; one cannot be created independently of the other. In many cases, they are now one in the same.

For companies whose main product is information, such as financial services companies, it's clear that information management is the core of the business strategy itself. How an investment firm manages the clients' accounts, how its clients interact with the company, and how investments are made are all done through the management of information. A financial services company must co-create business and IT strategy.

But consider a company like FedEx, most well known as the package delivery company. Are customers paying to have a package delivered or to have information about that package's delivery route and timetable? One could argue that they are one in the same and that increasingly the company's business strategy *is* its IS strategy. Certainly, there are components of the operation that are more than just information. There are actual packages to be loaded on actual trucks and planes, which are then actually delivered to their destinations. However, to make it all work, the company must rely on IS. Should the IS stop working or have a serious failure, FedEx would be unable to do business. A company like this must co-create IT strategy and business strategy.

This was not true a few years ago. Companies could often separate IS strategy from business strategy in part because their products or services did not have a large information component. For example, a few years ago, should the IS of a trucking company stop working, the trucks would still be able to take their shipments to their destination and pick up new ones. It might be slower or a bit more chaotic, but the business wouldn't stop. Today, that's not the case. Complicated logistics are the norm, and IS are the foundation of the business as seen at FedEx.

With the increasing number of IS applications on the Web and on mobile devices, firms increasingly need to co-create business and IT strategy. Managers who think they can build a business model without considering the opportunities and impact of information systems, using both the resources owned by the firm and those available on the Web, will find they have significant difficulties creating business opportunities as well as sustainable advantage in their marketplace.

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### SUMMARY

- Information resources include data, technology, people, and processes within an organization. Information resources can be either assets or capabilities.
- IT infrastructure and information repositories are IT assets. Three major categories of IT capabilities are technical skills, IT management skills, and relationship skills.
- Using IS for strategic advantage requires an awareness of the many relationships that affect both competitive business and information strategies.
- The five competitive forces model implies that more than just the local competitors influence the reality of the business situation. Analyzing the five competitive forces—threat of new entrants, buyers' bargaining power, suppliers' bargaining power, industry competitors, and threat of substitute products—from both a business view and an information systems view helps general managers use information resources to minimize the effect of these forces on the organization.
- The value chain highlights how information systems add value to the primary and support activities of a firm's internal operations as well as to the activities of its customers and of other components of its supply chain.
- The resource-based view (RBV) helps a firm understand the value created by its strategy. RBV maintains that competitive advantage comes from a firm's information resources. Resources enable a firm to attain and sustain competitive advantage.
- IT can facilitate strategic alliances. *Ecosystems* are groups of strategic alliances working together to deliver goods and services. Supply chain management (SCM) is a mechanism that may be used for creating strategic alliances.
- *Co-opetition* is the complex arrangement through which companies cooperate and compete at the same time with other companies in their value net.
- Numerous risks are associated with using information systems to gain strategic advantage: awaking a sleeping giant, demonstrating bad timing, implementing poorly, failing to deliver what customers want, avoiding mobile-based alternatives, and running afoul of the law.

### KEY TERMS

business ecosystem (p. 34)  
 co-opetition (p. 48)  
 customer relationship management (CRM) (p. 42)  
 enterprise resource planning (ERP) (p. 42)

information resources (p. 36)  
 IT asset (p. 36)  
 IT capability (p. 36)  
 network effects (p. 34)  
 resource-based view (RBV) (p. 45)  
 strategic alliance (p. 48)

social capital (p. 47)  
 supply chain management (SCM) (p. 42)

### DISCUSSION QUESTIONS

1. How can information itself provide a competitive advantage to an organization? Give two or three examples. For each example, describe its associated risks.
2. Use the five competitive forces model as described in this chapter to describe how information technology might be used to provide a winning position for each of these businesses:
  - a. A global advertising agency
  - b. A local restaurant
  - c. A mobile applications provider
  - d. An insurance company
  - e. A Web-based audio book service

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### 52 Strategic Use of Information Resources

3. Using the value chain model, describe how information technology might be used to provide a winning position for each of these businesses:
  - a. A global advertising agency
  - b. A local restaurant
  - c. A mobile applications provider
  - d. An insurance company
  - e. A Web-based audio book service
4. Use the resource-based view as described in this chapter to describe how information technology might be used to provide and sustain a winning position for each of these businesses:
  - a. A global advertising agency
  - b. A local restaurant
  - c. A mobile applications provider
  - d. An insurance company
  - e. A Web-based audio book service
5. Some claim that the only sustainable competitive advantage for an organization is its relationships with its customers. All other advantages eventually erode. Do you agree or disagree? How can information systems play a role in maintaining the organization's relationship with its customers? Defend your position.
6. Cisco Systems has a network of component suppliers, distributors, and contract manufacturers that are linked through Cisco's extranet. When a customer orders a Cisco product at its Web site, the order triggers contracts to manufacturers of printed circuit board assemblies when appropriate and alerts distributors and component suppliers. Cisco's contract manufacturers are aware of the order because they can log on to its extranet and link with Cisco's own manufacturing execution systems. What are the advantages of Cisco's strategic alliances? What are the risks to Cisco? To the suppliers?

### ■ CASE STUDY 2-1 Groupon

Groupon, Inc. raised \$700 million at its IPO in the fall of 2011, instantly providing a valuation of almost \$13 billion for a company that was only three years old at the time. Some question the value, claiming Groupon has no sustainable competitive advantage. Others see Groupon as an innovative company with high potential.

Groupon sells Internet coupons for events, services, and other popular items that customers might want to buy. Customers sign up for daily e-mails targeted to their local market. The daily deal, offered for one-day only and only if a predetermined minimum number of customers buy it, gives customers 50% off the "retail" price. For example, a \$100 three-month health club membership would sell for \$50 on Groupon. The customer pays \$50 to Groupon and prints a certificate to redeem at the health club. Groupon keeps 50% of the revenue, or \$25 in this case, and gives the rest to the health club. Effectively, retailers are offering 75% off with the customer saving 50% and Groupon taking the rest.

Groupon pays the retailer when the coupon is redeemed, making money both on the float between the time revenue is collected and the time the retailer is paid and on the certificates that are never redeemed at all, which the industry calls *breakage*. Retailers make money in the long run by introducing customers to their products, selling them additional products and services when they come in to redeem their coupons, and turning them into repeat customers. And retailers benefit from the buzz created when their business is on Groupon.

In August 2010, Groupon launched its first national deal, a coupon worth \$50 of Gap apparel and accessories for \$25. It sold over 440,000 coupons, netting Groupon and the Gap close to \$11 million. But not all vendors are the size of the Gap, and smaller vendors have been overwhelmed with too many coupons. One local business owner said the company lost \$8,000 on its Groupon promotion when too many coupons were issued. In fact, a study of 150 retailers showed that only 66% found their deals profitable.

Around the time of the IPO, analysts and observers alike claimed that Groupon's business model was not sustainable. In addition to the large number of retailers who found their deals unprofitable, observers noted that Groupon does not produce anything of value, and it isn't adding value to the retailers. Further, there are no barriers to entry to stop competitors. In May 2011, more than 450 competitors offering discounts and deals included LivingSocial, another daily deal site; restaurant.com, a site for restaurant gift certificates at a deep discount; and overstock.com and woot.com, sites offering discounted merchandise, not to mention deep-pocketed competitors like Amazon.com.