

## CHAPTER

# 7

# Business Strategy: Innovation, Entrepreneurship, and Platforms

## Chapter Outline

- 7.1** Competition Driven by Innovation  
*The Innovation Process*
- 7.2** Strategic and Social Entrepreneurship
- 7.3** Innovation and the Industry Life Cycle  
*Introduction Stage*  
*Growth Stage*  
*Shakeout Stage*  
*Maturity Stage*  
*Decline Stage*  
*Crossing the Chasm*
- 7.4** Types of Innovation  
*Incremental vs. Radical Innovation*  
*Architectural vs. Disruptive Innovation*
- 7.5** Platform Strategy  
*The Platform vs. Pipeline Business Models*  
*The Platform Ecosystem*
- 7.6** Implications for Strategic Leaders

## Learning Objectives

- LO 7-1** Outline the four-step innovation process from idea to imitation.
- LO 7-2** Apply strategic management concepts to entrepreneurship and innovation.
- LO 7-3** Describe the competitive implications of different stages in the industry life cycle.
- LO 7-4** Derive strategic implications of the crossing-the-chasm framework.
- LO 7-5** Categorize different types of innovations in the markets-and-technology framework.
- LO 7-6** Explain why and how platform businesses can outperform pipeline businesses.

## Netflix: Disrupting the TV Industry

**JUST LIKE CABLE** content providers disrupted the broadcast model of television, companies streaming video on demand are now disrupting the television industry once again.

The disruption by cable content providers played out in the 1980s and 1990s, upsetting a handful of broadcast networks with cable's dozens and then hundreds of channels. The current wave of disruption started in the 2000s, bypassing old-line cable content providers for direct online streaming. Now a multitude of devices—TV, PC, laptop, tablet, smartphone—provides a screen for online streaming. Netflix, riding atop the crest of this wave to industry leadership and competitive advantage, accounts for more than one-third of all downstream internet traffic in the United States during peak hours!

How did Netflix get here? It started as an obscure online shop renting DVDs delivered through U.S. mail. After being annoyed at having to pay more than \$40 in late fees for a Blockbuster video, Reed Hastings started Netflix in 1997 to offer online rentals of DVDs. At the time, the commercial internet was in its infancy; Amazon had just made its IPO in the same year. Streaming content may have been only a distant dream in the era of dial-up internet, but Netflix got a head start by turning from the dwindling VHS format and dealing with DVDs, which were cheaper and easier to mail. An improved business model helped too.

In 1999 Netflix rolled out a monthly subscription model, with unlimited rentals for a single monthly rate (and no late fees!). Rental DVDs were sent in distinctive red envelopes, with preprinted return envelopes. New rentals would not be sent until the current rental was returned.

Even with an innovative business model, Netflix got off to a slow start. By 2000, it had only about 300,000 subscribers and was losing money. Hastings approached Blockbuster, at the time the largest brick-and-mortar video rental chain with almost 8,000 stores in the United

States. He proposed selling Blockbuster 49 percent of Netflix and rebranding it as Blockbuster.com. Basically the idea was that Netflix would become the online presence for the huge national chain. The dot-com bubble had just burst, and Blockbuster turned Netflix down cold. Netflix, however, survived the dot-com bust, and by 2002, the company was profitable and went public. Blockbuster began online rentals in 2004, but by this time, Netflix already had a subscriber base of almost 4 million and a strong brand identity. Blockbuster lost 75 percent of its market value



*House of Cards*, a Netflix original series, stars Kevin Spacey and Robin Wright.  
©A-Pix Entertainment/Photofest

between 2003 and 2005. From there it went from bad to worse. In 2010, the once mighty Blockbuster filed for bankruptcy.

Netflix was at the forefront of the current wave of disruption in the TV industry as it began streaming content over the internet in 2007. And it stayed at the forefront. It

adjusted quickly to the new options consumers had to receive content, making streaming available on a large number of devices including mobile phones, tablets, game consoles, and new devices dedicated to internet content streaming such as Roku, Apple TV, and Google Chromecast. At the same time, more and more Americans were signing up for high-speed broadband internet connections, making streaming content a much more enjoyable experience. The market for internet-connected, large, high-definition flat-screen TVs also began to take off. Within just two years, Netflix subscriptions (then priced at \$7.99 per month) jumped to 12 million.

Old-line media executives continued to dismiss Netflix as a threat. In 2010, Time Warner CEO Jeff Bewkes snubbed Netflix, saying, “It’s a little bit like, is the Albanian army going to take over the world? I don’t think so.”<sup>1</sup>

Even Reed Hastings called what Netflix provided “rerun TV.” But behind their bravado, the broadcast networks were waking up to the Netflix threat. They stopped distributing content to Netflix and instead made it available through Hulu.com, an online content website jointly owned by several major networks. In 2011, Hulu began offering original content that was not available on broadcast or cable television. With its lower-cost structure, the networks saw Hulu’s


streaming model as a way to test new series ideas with minimal financial risk. In response, Netflix announced a move to create and stream original content online.

But not on the cheap. Since content streaming was Netflix’s main business, it devoted significant resources to produce high-quality content. In 2013, Netflix released the political drama *House of Cards*, followed, among others, by the comedy-drama *Orange Is the New Black* and *The Crown*, a biographical series about Queen Elizabeth II. These shows proved tremendous hits and have received many Emmys and Golden Globes.

In 2017, Netflix had 100 million subscribers worldwide, 51 million in the United States. Its revenues were \$9 billion, and its market cap was more than \$60 billion. Over the past decade, Netflix’s stock appreciated by more than 4,200 percentage points, while the tech-heavy NASDAQ-100 index grew by “only” 192 percentage points in the same period. By innovating on many dimensions, Netflix was able to not only disrupt the TV industry, but also to gain a competitive advantage.<sup>2</sup>

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You will learn more about Netflix by reading this chapter; related questions appear in “ChapterCase 7 / Consider This. . . .”

 **INNOVATION** the successful introduction of a new product, process, or business model—is a powerful driver in the competitive process. The ChapterCase provides an example of how innovations in technology and business models can make existing competitors obsolete, and how they allowed Netflix to gain a competitive advantage.

Continued innovation forms the bedrock of Netflix’s business strategy. Using big data analytics, in particular, Netflix introduced a number of early innovations in the video rental business. One of the more ingenious moves by Netflix was to have each user build a queue of movies he or she wanted to watch next. This allowed Netflix to predict future demand for specific movies fairly accurately. Another innovation was to create a “personalized recommendation engine” for each user that would predict what each subscriber might want to watch next based not only on a quick rating survey and the subscriber’s viewing history, but also what movies users with a similar profile had watched and enjoyed. Based on Netflix’s proprietary learning algorithm, the recommendations would improve over time as the user’s preferences become more clear. This also allowed Netflix to steer users away from hit movies (where wait times for DVD rentals were long because the company only had a limited number in its library) to lesser-known titles in its catalog. The ability to bring in the *long tail*<sup>3</sup> of demand delighted not only viewers, as they enjoyed lesser-known, but often critically acclaimed films, but also movie studios, which could now make additional money on movies that would otherwise not be in demand. Moreover, in contrast to other players in the media industry, Netflix was fast to catch the wave of content streaming via the internet.

Innovation allows firms to redefine the marketplace in their favor and achieve a competitive advantage.<sup>4</sup> That’s why we focus on innovation and the related topic of entrepreneurship in this chapter—to celebrate innovation as a powerful competitive weapon for business strategy formulation. We begin this chapter by detailing how competition is a process driven by continuous innovation. Next we discuss strategic and social entrepreneurship. We then

take a deep dive into the industry life cycle. This helps us to formulate a more dynamic business strategy as the industry changes over time. We also introduce the crossing-the-chasm framework, highlighting the difficulties in transitioning through different stages of the industry life cycle. We then move into a detailed discussion of different types of innovation using the markets-and-technology framework. We next present insights on how to compete in two-sided markets when discussing platform strategy. As with every chapter, we conclude with practice-oriented *Implications for Strategic Leaders*.

## 7.1 Competition Driven by Innovation

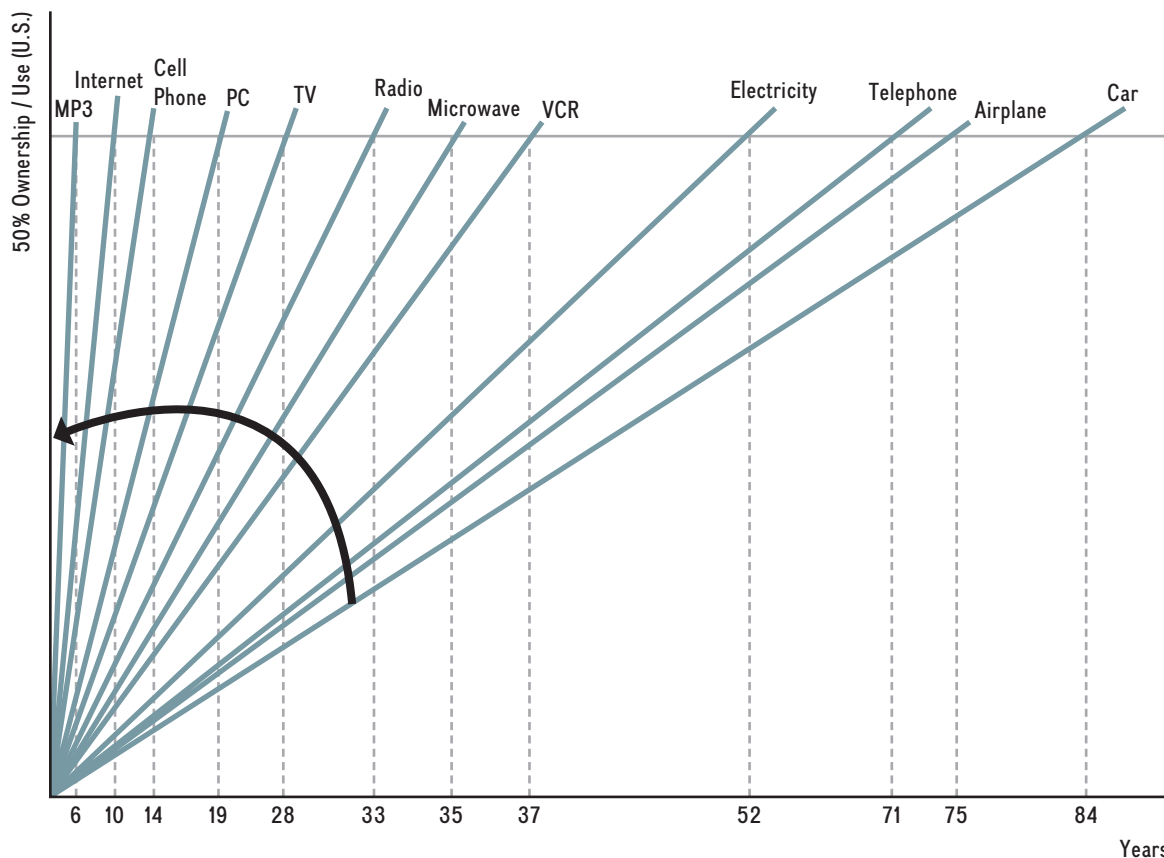
Competition is a process driven by the “perennial gale of creative destruction,” in the words of famed economist Joseph Schumpeter.<sup>5</sup> The continuous waves of market leadership changes in the TV industry, detailed in the ChapterCase, demonstrate the potency of innovation as a competitive weapon: It can simultaneously create and destroy value. Firms must be able to innovate while also fending off competitors’ imitation attempts. A successful strategy requires both an effective offense and a hard-to-crack defense.

Many firms have dominated an early wave of innovation only to be challenged and often destroyed by the next wave. As highlighted in the ChapterCase, traditional television networks (ABC, CBS, and NBC) have been struggling to maintain viewers and advertising revenues as cable and satellite providers offered innovative programming. Those same cable and satellite providers now are trying hard to hold on to viewers as more and more people gravitate toward customized content online. To exploit such opportunities, Google acquired YouTube, while Comcast, the largest U.S. cable operator, purchased NBC-Universal.<sup>6</sup> Comcast’s acquisition helps it integrate delivery services and content, with the goal of establishing itself as a new player in the media industry. In turn, both traditional TV and cable networks are currently under threat from content providers that stream via the internet, such as Netflix, YouTube, and Amazon.

As the adage goes, change is the only constant—and the rate of technological change has accelerated dramatically over the past hundred years. Changing technologies spawn new industries, while others die. This makes innovation a powerful strategic weapon to gain and sustain competitive advantage. Exhibit 7.1 shows how many years it took for different technological innovations to reach 50 percent of the U.S. population (either through ownership or usage). As an example, it took 84 years for half of the U.S. population to own a car, but only 28 years for half the population to own a TV. The pace of the adoption rate of recent innovations continues to accelerate. It took 19 years for the PC to reach 50 percent ownership, but only 6 years for MP3 players to accomplish the same diffusion rate.

What factors explain increasingly rapid technological diffusion and adoption? One determinant is that initial innovations such as the car, airplane, telephone, and the use of electricity provided the necessary infrastructure for newer innovations to diffuse more rapidly. Another reason is the emergence of new business models that make innovations more accessible. For example, Dell’s direct-to-consumer distribution system improved access to low-cost PCs, and Walmart’s low-price, high-volume model used its sophisticated IT logistics system to fuel explosive growth. In addition, satellite and cable distribution systems facilitated the ability of mass media such as radio and TV to deliver advertising and information to a wider audience. The speed of technology diffusion has accelerated further with the emergence of the internet, social networking sites, and viral messaging. Amazon continues to drive increased convenience, higher efficiency and lower costs in retailing. The accelerating speed of technological changes has significant implications for the competitive process and firm strategy. We will now take a close look at the innovation process unleashed by technological changes.

## EXHIBIT 7.1 / Accelerating Speed of Technological Change



SOURCE: Depiction of data from the U.S. Census Bureau, the Consumer Electronics Association, *Forbes*, and the National Cable and Telecommunications Association.

## LO 7-1

Outline the four-step innovation process from idea to imitation.

## THE INNOVATION PROCESS

Broadly viewed, innovation describes the discovery, development, and transformation of new knowledge in a four-step process captured in the *four I's*: *idea*, *invention*, *innovation*, and *imitation* (see Exhibit 7.2).<sup>7</sup>

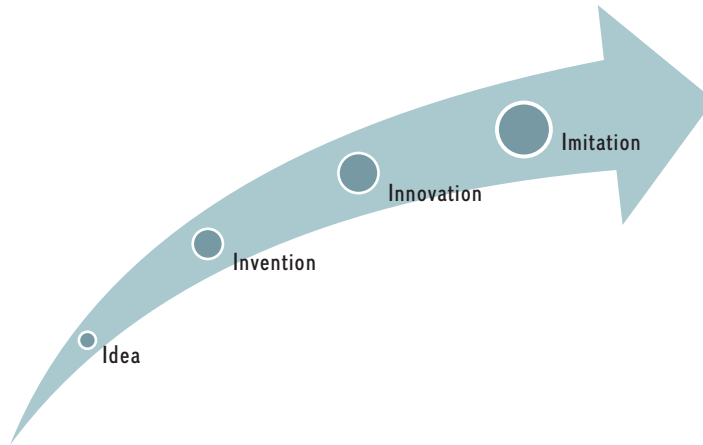
The innovation process begins with an *idea*. The idea is often presented in terms of abstract concepts or as findings derived from basic research. Basic research is conducted to discover new knowledge and is often published in academic journals. This may be done to enhance the fundamental understanding of nature, without any commercial application or benefit in mind. In the long run, however, basic research is often transformed into applied research with commercial applications. For example, wireless communication technology today is built upon the fundamental science breakthroughs Albert Einstein accomplished over 100 years ago in his research on the nature of light.<sup>8</sup>

In a next step, **invention** describes the transformation of an idea into a new product or process, or the modification and recombination of existing ones. The practical application of basic knowledge in a particular area frequently results in new technology. If an invention is *useful*, *novel*, and *non-obvious* as assessed by the U.S. Patent and Trademark Office, it

**invention** The transformation of an idea into a new product or process, or the modification and recombination of existing ones.

## EXHIBIT 7.2 /

The Four I's: Idea, Invention, Innovation, and Imitation



can be patented.<sup>9</sup> A **patent** is a form of *intellectual property*, and gives the inventor exclusive rights to benefit from commercializing a technology for a specified time period in exchange for public disclosure of the underlying idea (see also the discussion on *isolating mechanisms* in Chapter 4). In the United States, the time period for the right to exclude others from the use of the technology is 20 years from the filing date of a patent application. Exclusive rights often translate into a *temporary monopoly position* until the patent expires. For instance, many pharmaceutical drugs are patent protected.

Strategically, however, patents are a *double-edged sword*. On the one hand, patents provide a temporary monopoly as they bestow exclusive rights on the patent owner to use a novel technology for a specific time period. Thus, patents may form the basis for a competitive advantage. Because patents require full disclosure of the underlying technology and know-how so that others can use it freely once the patent protection has expired, many firms find it strategically beneficial *not* to patent their technology. Instead they use **trade secrets**, defined as valuable proprietary information that is not in the public domain and where the firm makes every effort to maintain its secrecy. The most famous example of a trade secret is the Coca-Cola recipe, which has been protected for over a century.<sup>10</sup> The same goes for Ferrero's Nutella, whose secret recipe is said to be known by even fewer than the handful of people who have access to the Coca-Cola recipe.<sup>11</sup>

Avoiding public disclosure and thus making its underlying technology widely known is precisely the reason Netflix does not patent its recommendation algorithm or Google its PageRank algorithm. Netflix has an advantage over competitors because its recommendation algorithm works best; the same goes for Google—its search algorithm is the best available. Disclosing how exactly these algorithms work would nullify their advantage.

**Innovation** concerns the *commercialization* of an invention.<sup>12</sup> The successful commercialization of a new product or service allows a firm to extract temporary monopoly profits. As detailed in the ChapterCase, Netflix began its life with a business model innovation, offering unlimited DVD rentals via the internet, without any late fees. However, Netflix gained its early lead by applying big data analytics to its user preferences to not only predict future demand but also to provide highly personalized viewing recommendations. The success of the latter is evident by the fact that movies that were recommended to viewers scored higher than they were scored previously. To sustain a competitive advantage, however, a firm must continuously innovate—that is, it must produce a string of successful new products or services over time. In this spirit, Netflix further developed its business model innovation, moving from online DVD rentals to directly streaming content via the internet. Moreover, it innovated further in creating proprietary content such as *House of Cards* and *Orange Is the New Black*.

**patent** A form of *intellectual property* that gives the inventor exclusive rights to benefit from commercializing a technology for a specified time period in exchange for public disclosure of the underlying idea.

**trade secret** Valuable proprietary information that is not in the public domain and where the firm makes every effort to maintain its secrecy.

**innovation** The commercialization of any new product or process, or the modification and recombination of existing ones.



**first-mover advantages**

Competitive benefits  
that accrue to the  
successful innovator.

Successful innovators can benefit from a number of **first-mover advantages**,<sup>13</sup> including economies of scale as well as experience and learning-curve effects (as discussed in Chapter 6). First movers may also benefit from *network effects* (see the discussion of Apple and Uber later in this chapter). Moreover, first movers may hold important intellectual property such as critical patents. They may also be able to lock in key suppliers as well as customers through increasing switching costs. For example, users of Microsoft Word might find the switching costs entailed in moving to a different word-processing software prohibitive. Not only would they need to spend many hours learning the new software, but collaborators would also need to have compatible software installed and be familiar with the program to open and revise shared documents.

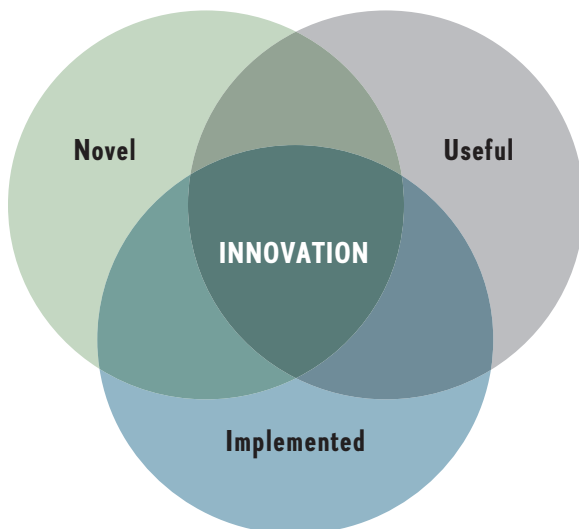
Google—by offering a free web-based suite of application software such as word-processing (Google Docs), spreadsheet (Google Sheets), and presentation programs (Google Slides)—is attempting to minimize switching costs by leveraging *cloud computing*—a real-time network of shared computing resources via the internet (Google Drive). Rather than requiring each user to have the appropriate software installed on his or her personal computer, the software is maintained and updated in the cloud. Files are also saved in the cloud, which allows collaboration in real time globally wherever one can access an internet connection.

Innovation need not be high-tech to be a potent competitive weapon, as P&G's history of innovative product launches such as the Swiffer line of cleaning products shows. P&G uses the *razor-razor-blade business model* (introduced in Chapter 5), where the consumer purchases the handle at a low price, but must pay a premium for replacement refills and pads over time. As shown in Exhibit 7.3, an innovation needs to be novel, useful, and successfully implemented to help firms gain and sustain a competitive advantage.

The innovation process ends with *imitation*. If an innovation is successful in the marketplace, competitors will attempt to imitate it. Although Netflix has some 50 million U.S. subscribers, imitators are set to compete its advantage away. Amazon offers its Instant Video service to its estimated 65 million Prime subscribers (\$99 a year or \$8.25 a month), with selected titles free. In addition, Prime members receive free two-day shipping on Amazon purchases.

Hulu Plus (\$7.99 a month), a video-on-demand service, has some 9 million subscribers. One advantage Hulu Plus has over Netflix and Amazon is that it typically makes the latest episodes of popular TV shows available the day following broadcast, on Hulu; the shows are often delayed by several months before being offered by Netflix or Amazon. A joint venture of NBCUniversal Television Group (Comcast), Fox Broadcasting (21<sup>st</sup> Century Fox), and Disney/ABC Television Group (The Walt Disney Co.), Hulu Plus uses advertisements along with its subscription fees as revenue sources. Finally, Google's YouTube with its more than 1 billion users is evolving into a TV ecosystem, benefiting not only from free content uploaded by its users but also creating original programming. As of 2017, the most subscribed channels were by PewDiePie (57 million) and YouTube Spotlight, its official channel (26 million) used to highlight videos and events such as YouTube Music Awards and YouTube Comedy Week<sup>14</sup>. Google's business is, of course, ad supported. Only time will tell whether Netflix will be able to sustain its competitive advantage given the imitation attempts by a number of potent competitors.

**EXHIBIT 7.3** / Innovation: A Novel and Useful Idea That Is Successfully Implemented



## 7.2 Strategic and Social Entrepreneurship

**Entrepreneurship** describes the process by which change agents (entrepreneurs) undertake economic risk to innovate—to create new products, processes, and sometimes new organizations.<sup>15</sup> Entrepreneurs innovate by commercializing ideas and inventions.<sup>16</sup> They seek out or create new business opportunities and then assemble the resources necessary to exploit them.<sup>17</sup> Indeed, innovation is the competitive weapon entrepreneurs use to exploit opportunities created by change, or to create change themselves, in order to commercialize new products, services, or business models.<sup>18</sup> If successful, entrepreneurship not only drives the competitive process, but it also creates value for the individual entrepreneurs and society at large.

Although many new ventures fail, some achieve spectacular success. Examples of successful entrepreneurs are:

- **Reed Hastings**, founder of Netflix featured in the ChapterCase. Hastings grew up in Cambridge, Massachusetts. He obtained an undergraduate degree in math and then volunteered for the Peace Corps for two years, teaching high school math in Swaziland (Africa). Next, he pursued a master's degree in computer science, which brought him to Silicon Valley. Hastings declared his love affair with writing computer code, but emphasized, “The big thing that Stanford did for me was to turn me on to the entrepreneurial model.”<sup>19</sup> His net worth today is an estimated \$1 billion.
- **Dr. Dre**, featured in ChapterCase 4, a successful rapper, music and movie producer, and serial entrepreneur. Born in Compton, California, Dr. Dre focused on music and entertainment early on during high school, working his first job as a DJ. Dr. Dre's major breakthrough as a rapper came with the group N.W.A. One of his first business successes as an entrepreneur was Death Row Records, which he founded in 1991. A year later, Dr. Dre's first solo album, *The Chronic*, was a huge hit. In 1996, Dr. Dre founded Aftermath Entertainment and signed famed rappers such as 50 Cent and Eminem. Dr. Dre, known for his strong work ethic and attention to detail, expects nothing less than perfection from the people with whom he works. Stories abound that Dr. Dre made famous rappers rerecord songs hundreds of times if he was not satisfied with the outcome. In 2014, Dr. Dre appeared to become the first hip-hop billionaire after Apple acquired Beats Electronics for \$3 billion. In 2015, N.W.A's early success was depicted in the biographical movie *Straight Outta Compton*, focusing on group members Eazy-E, Ice Cube, and Dr. Dre, who coproduced the film, grossing over \$200 million at the box office, with a budget of \$45 million.<sup>20</sup>
- **Jeff Bezos**, the founder of Amazon.com (featured in ChapterCase 8), the world's largest online retailer. The stepson of a Cuban immigrant, Bezos graduated with a degree in computer science and electrical engineering, before working as a financial analyst on Wall Street. In 1994, after reading that the internet was growing by 2,000 percent a month, he set out to leverage the internet as a new distribution channel. Listing products that could be sold online, he finally settled on books because that retail market was fairly fragmented, with huge inefficiencies in its distribution system. Perhaps even more important, books are a perfect commodity because they are identical regardless of where a consumer buys them. This reduced uncertainty when introducing online shopping to consumers. In 2017 his personal wealth exceeded \$80 billion.<sup>21</sup>
- **Elon Musk**, an engineer and serial entrepreneur with a deep passion to “solve environmental, social, and economic challenges.”<sup>22</sup> We featured him in his role as leader of Tesla in ChapterCase 1. Musk left his native South Africa at age 17. He went to Canada and then to the United States, where he completed a bachelor's degree in economics and physics at the University of Pennsylvania. After only two days in a PhD program in

### LO 7-2

Apply strategic management concepts to entrepreneurship and innovation.

**entrepreneurship** The process by which people undertake economic risk to innovate—to create new products, processes, and sometimes new organizations.



Dr. Dre, rapper, music and movie producer, as well as highly successful serial entrepreneur.

©JC Olivera/Getty Images  
Entertainment/Getty Images



applied physics and material sciences at Stanford University, Musk left graduate school to found Zip2, an online provider of content publishing software for news organizations. Four years later, in 1999, computer maker Compaq acquired Zip2 for \$341 million (and was in turn acquired by HP in 2002). Musk moved on to co-found PayPal, an online payment processor. When eBay acquired PayPal for \$1.5 billion in 2002, Musk had the financial resources to pursue his passion to use science and engineering to solve social and economic challenges. He is leading three new ventures simultaneously: electric cars with Tesla, renewable energy with SolarCity, and space exploration with SpaceX.<sup>23</sup> (In 2016, Tesla Motors acquired SolarCity, renaming itself simply Tesla).

#### entrepreneurs

The agents that introduce change into the competitive system.

**Entrepreneurs** are the agents who introduce change into the competitive system. They do this not only by figuring out how to use inventions, but also by introducing new products or services, new production processes, and new forms of organization. Entrepreneurs can introduce change by starting new ventures, such as Reed Hastings with Netflix or Mark Zuckerberg with Facebook. Or they can be found within existing firms, such as A.G. Lafley at Procter & Gamble (P&G), who implemented an *open-innovation model* (which we'll discuss in Chapter 11). When innovating within existing companies, change agents are often called *intrapreneurs*: those pursuing *corporate entrepreneurship*.<sup>24</sup>

Entrepreneurs who drive innovation need just as much skill, commitment, and daring as the inventors who are responsible for the process of invention.<sup>25</sup> As an example, the engineer Nikola Tesla invented the alternating-current (AC) electric motor and was granted a patent in 1888 by the U.S. Patent and Trademark Office.<sup>26</sup> Because this breakthrough technology was neglected for much of the 20th century and Nikola Tesla did not receive the recognition he deserved in his lifetime, the entrepreneur Elon Musk is not just commercializing Tesla's invention but also honoring Tesla with the name of his company, Tesla, which was formed to design and manufacture all-electric automobiles. Tesla launched several all-electric vehicles based on Tesla's original invention (see ChapterCase 1).

#### strategic

##### entrepreneurship

The pursuit of innovation using tools and concepts from strategic management.

**Strategic entrepreneurship** describes the pursuit of innovation using tools and concepts from strategic management.<sup>27</sup> We can leverage innovation for competitive advantage by applying a strategic management lens to entrepreneurship. The fundamental question of strategic entrepreneurship, therefore, is how to combine entrepreneurial actions, creating new opportunities or exploiting existing ones with strategic actions taken in the pursuit of competitive advantage.<sup>28</sup> This can take place within new ventures such as Tesla or within established firms such as Apple. Apple's continued innovation in mobile devices is an example of strategic entrepreneurship: Apple's managers use strategic analysis, formulation, and implementation when deciding which new type of mobile device to research and develop, when to launch it, and how to implement the necessary organizational changes to support the product launch. Each new release is an innovation; each is therefore an act of entrepreneurship—planned and executed using strategic management concepts. In 2015, for example, Apple entered the market for computer wearables by introducing the Apple Watch. In 2017, Apple released the 10th-year anniversary model of its original iPhone, introduced in 2007.

#### social

##### entrepreneurship

The pursuit of social goals while creating a profitable business.

**Social entrepreneurship** describes the pursuit of social goals while creating profitable businesses. Social entrepreneurs evaluate the performance of their ventures not only by financial metrics but also by ecological and social contribution (*profits, planet, and people*). They use a *triple-bottom-line* approach to assess performance (discussed in Chapter 5). Examples of social entrepreneurship ventures include Teach For America, TOMS Shoes (which gives a pair of shoes to an economically disadvantaged child for every pair of shoes it sells), Better World Books (an online bookstore that uses capitalism to alleviate illiteracy around the world),<sup>29</sup> and Wikipedia, whose mission is to collect and develop educational information, and make it freely available to any person in the world (see following and MiniCase 14).

The founder of Wikipedia, Jimmy Wales, typifies social entrepreneurship.<sup>30</sup> Raised in Alabama, Wales was educated by his mother and grandmother who ran a nontraditional school. In 1994, he dropped out of a doctoral program in economics at Indiana University to take a job at a stock brokerage firm in Chicago. In the evenings he wrote computer code for fun and built a web browser. During the late 1990s internet boom, Wales was one of the first to grasp the power of an open-source method to provide knowledge on a very large scale. What differentiates Wales from other web entrepreneurs is his idealism: Wikipedia is free for the end user and supports itself solely by donations and not, for example, by online advertising. Wikipedia has 35 million articles in 288 languages, including some 5 million items in English. About 500 million people use Wikipedia each month. Wales' idealism is a form of social entrepreneurship: His vision is to make the entire repository of human knowledge available to anyone anywhere for free.

Since entrepreneurs and the innovations they unleash frequently create entire new industries, we now turn to a discussion of the industry life cycle to derive implications for competitive strategy.

### 7.3 Innovation and the Industry Life Cycle

Innovations frequently lead to the birth of new industries. Innovative advances in IT and logistics facilitated the creation of the overnight express delivery industry by FedEx and that of big-box retailing by Walmart. The internet set online retailing in motion, with new companies such as Amazon and eBay taking the lead, and it revolutionized the advertising industry first through Yahoo, and later Google and Facebook. Advances in nanotechnology are revolutionizing many different industries, ranging from medical diagnostics and surgery to lighter and stronger airplane components.<sup>31</sup>

Industries tend to follow a predictable **industry life cycle**: As an industry evolves over time, we can identify five distinct stages: *introduction*, *growth*, *shakeout*, *maturity*, and *decline*.<sup>32</sup> We will illustrate how the type of innovation and resulting strategic implications change at each stage of the life cycle as well as how innovation can initiate and drive a new life cycle.

The number and size of competitors change as the industry life cycle unfolds, and different types of consumers enter the market at each stage. That is, both the supply and demand sides of the market change as the industry ages. Each stage of the industry life cycle requires different competencies for the firm to perform well and to satisfy that stage's unique customer group. We first introduce the life cycle model before discussing different customer groups in more depth when introducing the crossing-the-chasm concept later in this chapter.<sup>33</sup>

Exhibit 7.4 depicts a typical industry life cycle, focusing on the smartphone industry in emerging and developed economies. In a stylized industry life cycle model, the horizontal axis shows time (in years) and the vertical axis market size. In Exhibit 7.4, however, we are taking a snapshot of the global smartphone industry in the year 2018. This implies that we are joining two different life cycles (one for emerging economies and one for developed economies) in the same exhibit at one point in time.

The development of most industries follows an S-curve. Initial demand for a new product or service is often slow to take off, then accelerates, before decelerating, and eventually turning to zero, and even becoming negative as a market contracts.

As shown in Exhibit 7.4, in emerging economies such as Argentina, Brazil, China, India, Indonesia, Mexico, and Russia, the smartphone industry is in the growth stage. The market for smartphones in these countries is expected to grow rapidly over the next few years. More and more of the consumers in these countries with very large populations

#### LO 7-3

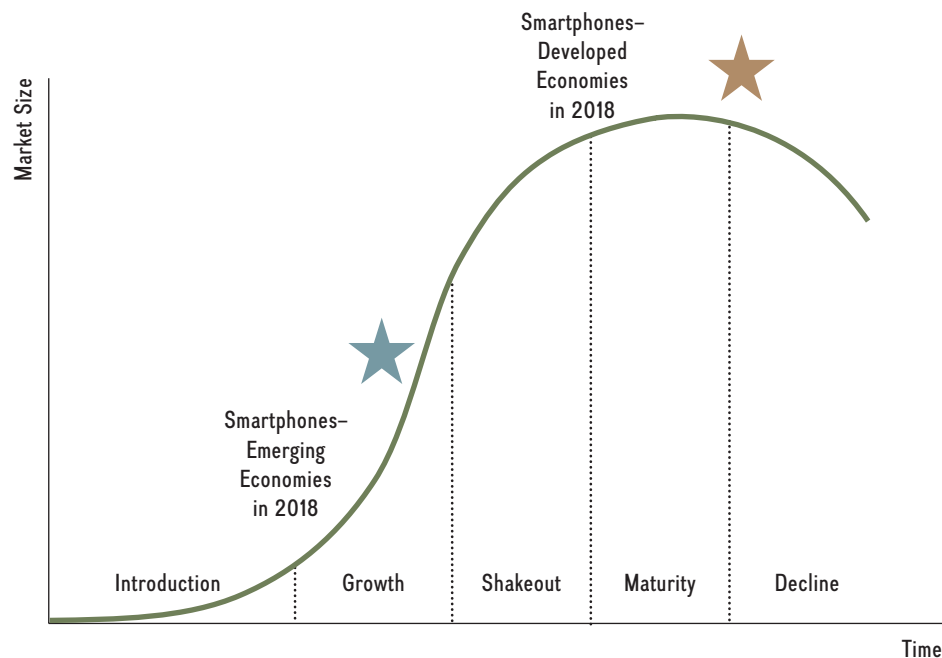
Describe the competitive implications of different stages in the industry life cycle.

#### industry life cycle

The five different stages—introduction, growth, shakeout, maturity, and decline—that occur in the evolution of an industry over time.

**EXHIBIT 7.4** /

Industry Life Cycle:  
The Smartphone  
Industry in Emerging  
and Developed  
Economies



are expected to upgrade from a simple mobile phone to a smartphone such as the Apple iPhone, Samsung Galaxy, or Xiaomi's popular Mi6.

In contrast, the market for smartphones is in the maturity stage in 2018 in developed economies such as Australia, Canada, Germany, Japan, South Korea, the United Kingdom, and the United States. This implies that developed economies moved through the prior three stages of the industry life cycle (introductory, growth, and shakeout) some years earlier. Because the smartphone industry is mature in these markets, little or no growth in market size is expected over the next few years because most consumers own smartphones. This implies that any market share gain by one firm comes at the expense of others, as users replace older smartphones with newer models. Competitive intensity is expected to be high.

Each stage of the industry life cycle—introduction, growth, shakeout, maturity, and decline—has different strategic implications for competing firms. We now discuss each stage in detail.

## INTRODUCTION STAGE

When an individual inventor or company launches a successful innovation, a new industry may emerge. In this introductory stage, the innovator's core competency is R&D, which is necessary to creating a product category that will attract customers. This is a capital-intensive process, in which the innovator is investing in designing a unique product, trying new ideas to attract customers, and producing small quantities—all of which contribute to a high price when the product is launched. The initial market size is small, and growth is slow.

In this introductory stage, when barriers to entry tend to be high, generally only a few firms are active in the market. In their competitive struggle for market share, they emphasize unique product features and performance rather than price.

Although there are some benefits to being early in the market (as previously discussed), innovators also may encounter *first-mover disadvantages*. They must educate potential

customers about the product's intended benefits, find distribution channels and complementary assets, and continue to perfect the fledgling product. Although a core competency in R&D is necessary to create or enter an industry in the introductory stage, some competency in marketing also is helpful in achieving a successful product launch and market acceptance. Competition can be intense, and early winners are well-positioned to stake out a strong position for the future. As one of the main innovators in software for mobile devices, Google's Android operating system for smartphones is enjoying a strong market position and substantial lead over competitors.

The strategic objective during the introductory stage is to achieve market acceptance and seed future growth. One way to accomplish these objectives is to initiate and leverage **network effects**,<sup>34</sup> the positive effect that one user of a product or service has on the value of that product for other users. Network effects occur when the value of a product or service increases, often exponentially, with the number of users. If successful, network effects propel the industry to the next stage of the life cycle, the growth stage (which we discuss next).

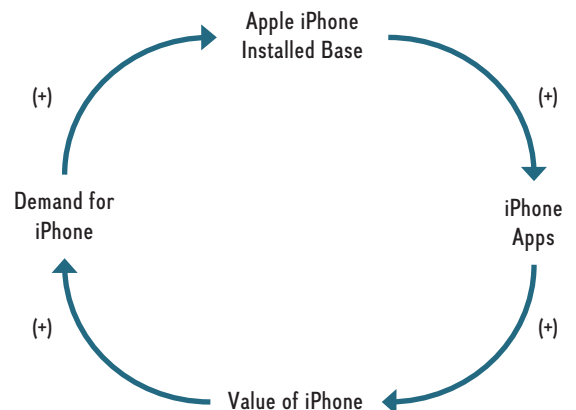
Apple effectively leveraged the network effects generated by numerous complementary software applications (apps) available via iTunes to create a tightly integrated ecosystem of hardware, software, and services, which competitors find hard to crack. The consequence has been a competitive advantage for over a decade, beginning with the introduction of the iPod in 2001 and iTunes in 2003. Apple launched its enormously successful iPhone in the summer of 2007. A year later, it followed up with the Apple App Store, which boasts, for almost anything you might need, "there's an app for that." Popular apps allow iPhone users to access their business contacts via LinkedIn, hail a ride via Uber, call colleagues overseas via Skype, check delivery of their Zappos packages shipped via UPS, get the latest news on Twitter, and engage in customer relationship management using Salesforce.com. You can stream music via Pandora, post photos using Instagram, watch Netflix, access Facebook to check on your friends, or video message using Snap.

Even more important is the effect that apps have on the value of an iPhone. Arguably, the explosive growth of the iPhone is due to the fact that the Apple App Store offers the largest selection of apps to its users. By 2017, the App Store offered more than 2 million apps, which had been downloaded more than 130 billion times, earning Apple some \$50 billion in revenues. Moreover, Apple argues that users have a better experience because the apps take advantage of the tight integration of hardware and software provided by the iPhone. The availability of apps, in turn, leads to network effects that increase the value of the iPhone for its users. Exhibit 7.5 shows how. Increased value creation, as we know from Chapter 6, is positively related to demand, which in turn increases the installed base, meaning the number of people using an iPhone. As of the spring of 2017, Apple had sold some 80 million iPhone 7 models in just six months. The average selling price of an iPhone was \$700; with the latest model (iPhone X) priced at \$1,000. As the installed base of iPhone users further increases, this incentivizes software developers to write even more apps. Making apps widely available strengthened Apple's position in the smartphone industry. Based on positive feedback loops, a virtuous cycle emerges where one factor positively reinforces another. Apple's ecosystem based on integrated hardware, software, and services providing a superior user experience is hard to crack for competitors.

#### network effects

The positive effect (externality) that one user of a product or service has on the value of that product for other users.

**EXHIBIT 7.5** / Leveraging Network Effects to Drive Demand: Apple's iPhone



## GROWTH STAGE

Market growth accelerates in the growth stage of the industry life cycle (see Exhibit 7.4). After the initial innovation has gained some market acceptance, demand increases rapidly as first-time buyers rush to enter the market, convinced by the proof of concept demonstrated in the introductory stage.

As the size of the market expands, a **standard** signals the market's agreement on a common set of engineering features and design choices.<sup>35</sup> Standards can emerge from the bottom up through competition in the marketplace or be imposed from the top down by government or other standard-setting agencies such as the Institute of Electrical and Electronics Engineers (IEEE) that develops and sets industrial standards in a broad range of industries, including energy, electric power, biomedical and health care technology, IT, telecommunications, consumer electronics, aerospace, and nanotechnology. Strategy Highlight 7.1 discusses the unfolding standards battle in the automotive industry.

### standard

An agreed-upon solution about a common set of engineering features and design choices.

## Strategy Highlight 7.1

### Standards Battle: Which Automotive Technology Will Win?

In the envisioned future transition away from gasoline-powered cars, Nissan Chairman Carlos Ghosn firmly believes the next technological paradigm will be electric motors. Ghosn calls hybrids a “halfway technology” and suggests they will be a temporary phenomenon at best. A number of start-up companies, including Tesla in the United States and BYD Auto in China, share Ghosn's belief in this particular future scenario.

One of the biggest impediments to large-scale adoption of electric vehicles, however, remains the lack of appropriate infrastructure: There are few stations where drivers can recharge their car's battery when necessary. With the range of electric vehicles currently limited to some 200 miles, many consider a lack of recharging stations a serious problem, so called “range anxiety.” High-end Tesla vehicles can achieve 250 miles per charge, while a lower priced Nissan Leaf's maximum range is roughly 85 miles. Tesla, Nissan, and other independent charging providers such as ChargePoint, however, are working hard to develop a network of charging stations. By early 2017, Tesla claimed a network of some 800 supercharger stations throughout the United States and was building more stalls at many stations. It also enabled the in-car map to identify how many stalls were open at each station in real time.

Nissan's Ghosn believes electric cars will account for up to 10 percent of global auto sales over the next decade. The



The Nissan Leaf, the world's best-selling electric vehicle.  
©VDWI Automotive/Alamy Stock Photo RF

Swedish car maker Volvo has gone even further by announcing that beginning in 2019 it will no longer produce any cars with internal combustion engines. Rather, all its new vehicles will be fully electric or hybrid. This is a strong strategic commitment by one of the traditional car manufacturers. It is also the first of its kind.

In contrast, Toyota is convinced gasoline-electric hybrids will become the next dominant technology. These different predictions have significant influence on how much money Nissan and Toyota invest in technology and where. Nissan builds one of its fully electric vehicles, the Leaf (an acronym for Leading, Environmentally friendly, Affordable, Family car) at a plant in Smyrna, Tennessee. Toyota is expanding

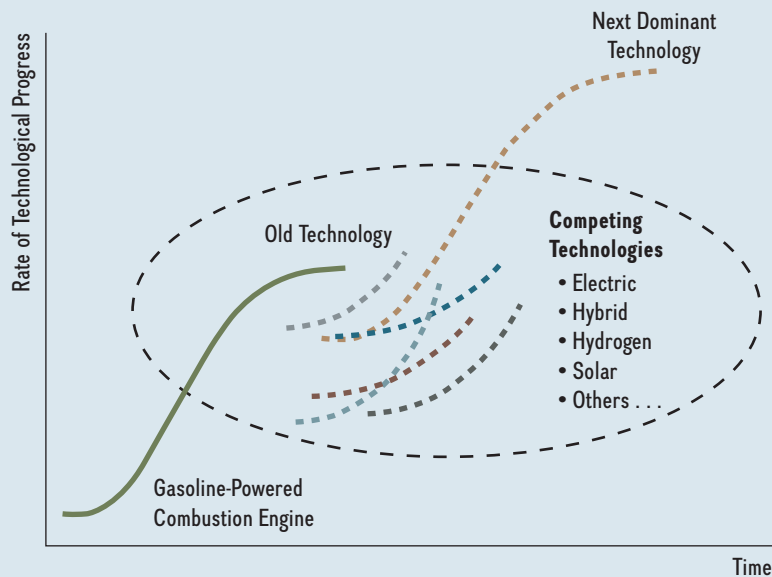
its R&D investments in hybrid technology. Nissan put its money where its mouth is and has spent millions developing its electric-car program since the late 1990s. Since it was introduced in December 2010, the Nissan Leaf has become the best-selling electric vehicle, with more than 250,000 units sold. The most recent Nissan Leaf model has a range of more than 100 miles per charge. In 2017, GM introduced the all-electric Chevy Bolt, with a range of over 200 miles per charge, similar to Tesla's Model 3.

Toyota, on the other hand, has already sold 10 million of its popular Prius cars since they were introduced in 1997. By 2020, Toyota plans to offer hybrid technology in all its

vehicles. Eventually, the investments made by Nissan and Toyota will yield different returns, depending on which predictions prove more accurate.

An alternative outcome is that neither hybrids nor electric cars will become the next paradigm. To add even more uncertainty to the mix, Honda and BMW are betting on cars powered by hydrogen fuel cells. In sum, many alternative technologies are competing to become the winner in setting a new standard for propelling cars. This situation is depicted in Exhibit 7.6, where the new technologies represent a swarm of new entries vying for dominance. Only time will tell which technology will win this standards battle.<sup>36</sup>

### EXHIBIT 7.6 / Automotive Technologies Compete for Industry Dominance



Since demand is strong during the growth phase, both efficient and inefficient firms thrive; the rising tide lifts all boats. Moreover, prices begin to fall, often rapidly, as standard business processes are put in place and firms begin to reap economies of scale and learning. Distribution channels are expanded, and complementary assets in the form of products and services become widely available.<sup>37</sup>

After a standard is established in an industry, the basis of competition tends to move away from product innovations toward process innovations.<sup>38</sup> **Product innovations**, as the name suggests, are new or recombined knowledge embodied in new products—the jet airplane, electric vehicle, smartphones, and wearable computers. **Process innovations** are new ways to produce existing products or to deliver existing services. Process innovations are made possible through advances such as the internet, lean manufacturing, Six Sigma, biotechnology, nanotechnology, and so on.

**product innovation**  
New or recombined knowledge embodied in new products.

**process innovation**  
New ways to produce existing products or deliver existing services.



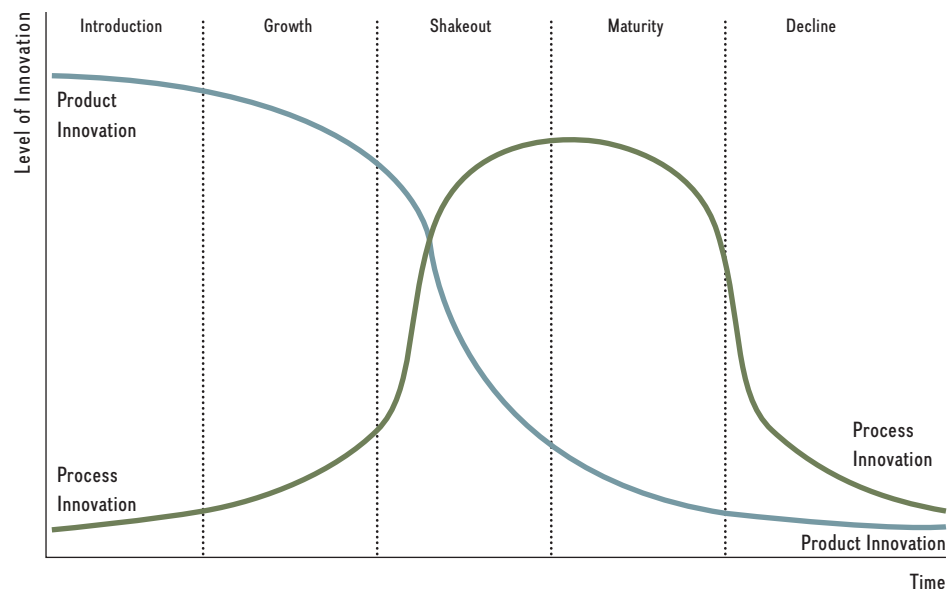
Process innovation must not be high-tech to be impactful, however. The invention of the standardized shipping container, for instance, has transformed global trade. By loading goods into uniform containers that could easily be moved between trucks, rail, and ships, significant savings in cost and time were accomplished. Before containerization was invented some 60 years ago, it cost almost \$6 to load a ton of (loose) cargo, and theft was rampant. After containerization, the cost for loading a ton of cargo had plummeted to \$0.16 and theft all but disappeared (because containers are sealed at the departing factory). Efficiency gains in terms of labor and time were even more impressive. Before containerization, dock labor could move 1.7 tons per hour onto a cargo ship. After containerization, this had jumped to 30 tons per hour. Ports are now able to accommodate much larger ships, and travel time across the oceans has fallen in half. As a consequence, costs for shipping goods across the globe have fallen rapidly. Moreover, containerization enabled optimization of global supply chains and set the stage for subsequent process innovations such as *just-in-time (JIT) operations management*. Taken together, a set of research studies estimated that containerization alone more than tripled international trade within five years of adopting this critical process innovation.<sup>39</sup>

Exhibit 7.7 shows the level of product and process innovation throughout the entire life cycle.<sup>40</sup> In the introductory stage, the level of *product* innovation is at a maximum because new features increasing perceived consumer value are critical to gaining traction in the market. In contrast, process innovation is at a minimum in the introductory stage because companies produce only a small number of products, often just prototypes or beta versions. The main concern is to commercialize the invention—that is, to demonstrate that the product works and that a market exists.

The relative importance, however, reverses over time. Frequently, a standard emerges during the growth stage of the industry life cycle (see the second column, “Growth,” in Exhibit 7.7). At that point, most of the technological and commercial uncertainties about the new product are gone. After the market accepts a new product, and a standard for the new technology has emerged, *process* innovation rapidly becomes more important than product innovation. As market demand increases, economies of scale kick in: Firms establish and optimize standard business processes through applications of lean manufacturing,

## EXHIBIT 7.7

Product and Process Innovation throughout an Industry Life Cycle



Six Sigma, and so on. As a consequence, product improvements become incremental, while the level of process innovation rises rapidly.

During the growth stage, process innovation ramps up (at increasing marginal returns) as firms attempt to keep up with rapidly rising demand while attempting to bring down costs at the same time. The core competencies for competitive advantage in the growth stage tend to shift toward manufacturing and marketing capabilities. At the same time, the R&D emphasis tends to shift to process innovation for improved efficiency. Competitive rivalry is somewhat muted because the market is growing fast.

Since market demand is robust in this stage and more competitors have entered the market, there tends to be more strategic variety: Some competitors will continue to follow a *differentiation* strategy, emphasizing unique features, product functionality, and reliability. Other firms employ a *cost-leadership strategy* in order to offer an acceptable level of value but lower prices to consumers. They realize that lower cost is likely a key success factor in the future, because this will allow the firm to lower prices and attract more consumers into the market. When introduced in the spring of 2010, for example, Apple's first-generation iPad was priced at \$829 for 64GB with a 3G Wi-Fi connection.<sup>41</sup> Just three years later, in spring 2013, the same model was priced at only one-third of the original price, or \$275.<sup>42</sup> Access to efficient and large-scale manufacturing operations (such as those offered by Foxconn in China, the company that assembles most of Apple's products) and effective supply chain capabilities are key success factors when market demand increases rapidly. By 2017, Gazelle, an ecommerce company that allows people to sell their electronic devices and to buy pre-certified used ones, offered a mere \$15 for a "flawless" first-generation iPad.

The key objective for firms during the growth phase is to stake out a strong strategic position not easily imitated by rivals. In the fast-growing shapewear industry, start-up company Spanx has staked out a strong position. In 1998, Florida State University graduate Sara Blakely decided to cut the feet off her pantyhose to enhance her looks when wearing pants.<sup>43</sup> Soon after she obtained a patent for her body-shaping undergarments, and Spanx began production and retailing of its shapewear in 2000. Sales grew exponentially after Blakely appeared on *The Oprah Winfrey Show*. By 2017, Spanx had grown to more than 250 employees and sold millions of Spanx "power panties," with estimated revenues of some \$500 million. To stake out a strong position and to preempt competitors, Spanx now offers over 200 products ranging from slimming apparel and swimsuits to bras and activewear. Moreover, it now designs and manufactures body-shaping undergarments for men ("Spanx for Men—Manx"). Spanx products are now available in over 50 countries globally via the internet. Moreover, to strengthen its strategic position and brand image in the United States, Spanx is opening retail stores across the country.

The shapewear industry's explosive growth—it is expected to reach \$6 billion in annual sales by 2022—has attracted several other players: Flexees by Maidenform, BodyWrap, and Miraclesuit, to name a few. They are all attempting to carve out positions in the new industry. Given Spanx's ability to stake out a strong position during the growth stage of the industry life cycle and the fact that it continues to be a moving target, it might be difficult for competitors to dislodge the company.

Taking the risk paid off for Spanx's founder: After investing an initial \$5,000 into her startup, Blakely became the world's youngest self-made female billionaire. Blakely was also listed in the Time 100, the annual list of the most influential people in the world.

## SHAKEOUT STAGE

Rapid industry growth and expansion cannot go on indefinitely. As the industry moves into the next stage of the industry life cycle, the rate of growth declines (see Exhibit 7.4). Firms begin to compete directly against one another for market share, rather than trying

to capture a share of an increasing pie. As competitive intensity increases, the weaker firms are forced out of the industry. This is the reason this phase of the industry life cycle is called the shakeout stage: Only the strongest competitors survive increasing rivalry as firms begin to cut prices and offer more services, all in an attempt to gain more of a market that grows slowly, if at all. This type of cutthroat competition erodes profitability of all but the most efficient firms in the industry. As a consequence, the industry often consolidates, as the weakest competitors either are acquired by stronger firms or exit through bankruptcy.

The winners in this increasingly competitive environment are often firms that stake out a strong position as cost leaders. Key success factors at this stage are the manufacturing and process engineering capabilities that can be used to drive costs down. The importance of process innovation further increases (albeit at diminishing marginal returns), while the importance of product innovation further declines.

Assuming an acceptable value proposition, price becomes a more important competitive weapon in the shakeout stage, because product features and performance requirements tend to be well-established. A few firms may be able to implement a blue ocean strategy, combining differentiation and low cost, but given the intensity of competition, many weaker firms are forced to exit. Any firm that does not have a clear strategic profile is likely to not survive the shakeout phase.

## MATURITY STAGE

After the shakeout is completed and a few firms remain, the industry enters the maturity stage. During the fourth stage of the industry life cycle, the industry structure morphs into an oligopoly with only a few large firms. Most of the demand was largely satisfied in the shakeout stage. Any additional market demand in the maturity stage is limited. Demand now consists of replacement or repeat purchases. The market has reached its maximum size, and industry growth is likely to be zero or even negative going forward. This decrease in market demand increases competitive intensity within the industry. In the maturity stage, the level of process innovation reaches its maximum as firms attempt to lower cost as much as possible, while the level of incremental product innovation sinks to its minimum (see Exhibit 7.7).

Generally, the firms that survive the shakeout stage tend to be larger and enjoy economies of scale, as the industry consolidated and most excess capacity was removed. The domestic airline industry has been in the maturity stage for a long time. The large number of bankruptcies as well as the wave of mega-mergers, such as those of Delta and Northwest, United and Continental, and American Airlines and US Airways, are a consequence of low or zero growth in a mature market characterized by significant excess capacity.

## DECLINE STAGE

Changes in the external environment (such as those discussed in Chapter 3 when presenting the PESTEL framework) often take industries from maturity to decline. In this final stage of the industry life cycle, the size of the market contracts further as demand falls, often rapidly. At this final phase of the industry life cycle, innovation efforts along both product and process dimensions cease (see Exhibit 7.7). If a technological or business model breakthrough emerges that opens up a *new* industry, however, then this dynamic interplay between product and process innovation starts anew.

If there is any remaining excess industry capacity in the decline stage, this puts strong pressure on prices and can further increase competitive intensity, especially if the industry

has high exit barriers. At this final stage of the industry life cycle, managers generally have four strategic options: *exit*, *harvest*, *maintain*, or *consolidate*.<sup>44</sup>

- **Exit.** Some firms are forced to *exit* the industry by bankruptcy or liquidation. The U.S. textile industry has experienced a large number of exits over the last few decades, mainly due to low-cost foreign competition.
- **Harvest.** In pursuing a *harvest strategy*, the firm reduces investments in product support and allocates only a minimum of human and other resources. While several companies such as IBM, Brother, Olivetti, and Nakajima still offer typewriters, they don't invest much in future innovation. Instead, they are maximizing cash flow from their existing typewriter product line.
- **Maintain.** Philip Morris, on the other hand, is following a *maintain strategy* with its Marlboro brand, continuing to support marketing efforts at a given level despite the fact that U.S. cigarette consumption has been declining.
- **Consolidate.** Although market size shrinks in a declining industry, some firms may choose to *consolidate* the industry by buying rivals. This allows the consolidating firm to stake out a strong position—possibly approaching monopolistic market power, albeit in a declining industry.

Although chewing tobacco is a declining industry, Swedish Match has pursued a number of acquisitions to consolidate its strategic position in the industry. It acquired, among other firms, the Pinkerton Tobacco Co. of Owensboro, Kentucky, maker of the Red Man brand. Red Man is the leading chewing tobacco brand in the United States. Red Man has carved out a strong strategic position built on a superior reputation for a quality product and by past endorsements of Major League Baseball players since 1904. Despite gory product warnings detailing the health risk of chewing tobacco and a federally mandated prohibition on marketing, the Red Man brand has remained not only popular, but also profitable.

The industry life cycle model assumes a more or less smooth transition from one stage to another. This holds true for most continuous innovations that require little or no change in consumer behavior. But not all innovations enjoy such continuity.

## CROSSING THE CHASM

In the influential bestseller *Crossing the Chasm*<sup>45</sup> Geoffrey Moore documented that many innovators were unable to successfully transition from one *stage of the industry life cycle* to the next. Based on empirical observations, Moore's core argument is that *each stage of the industry life cycle is dominated by a different customer group*. Different customer groups with distinctly different preferences enter the industry at each stage of the industry life cycle. Each customer group responds differently to a technological innovation. This is due to differences in the psychological, demographic, and social attributes observed in each unique customer segment. Moore's main contribution is that the significant differences between the *early* customer groups—who enter during the introductory stage of the industry life cycle—and *later* customers—who enter during the growth stage—can make for a difficult transition between the different parts of the industry life cycle. Such differences between customer groups lead to a big gulf or *chasm* into which companies and their innovations frequently fall. Only companies that recognize these differences and are able to apply the appropriate competencies at each stage of the industry life cycle will have a chance to transition successfully from stage to stage.

Exhibit 7.8 shows the **crossing-the-chasm framework** and the different customer segments. The industry life cycle model (shown in Exhibit 7.4) follows an S-curve leading

### LO 7-4

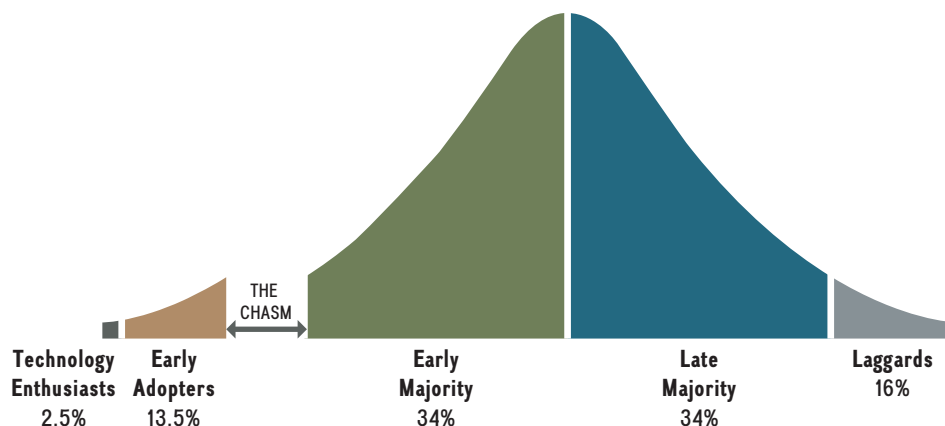
Derive strategic implications of the crossing-the-chasm framework.

**crossing-the-chasm framework** Conceptual model that shows how each stage of the industry life cycle is dominated by a different customer group.

## EXHIBIT 7.8

## The Crossing-the-Chasm Framework

**SOURCE:** Adapted from G.A. Moore (1991), *Crossing the Chasm: Marketing and Selling Disruptive Products to Mainstream Customers* (New York: HarperCollins), 17.



up to 100 percent total market potential that can be reached during the maturity stage. In contrast, the *chasm framework* breaks down the 100 percent market potential into different customer segments, highlighting the *incremental* contribution each specific segment can bring into the market. This results in the familiar bell curve. Note the big gulf, or *chasm*, separating the early adopters from the early and late majority that make up the mass market. Social network sites have followed a pattern similar to that illustrated in Exhibit 7.8. Friendster was unable to cross the big chasm. Myspace was successful with the early majority, but only Facebook went on to succeed with the late majority and laggards. Each stage customer segment, moreover, is also separated by smaller chasms. Both the large competitive chasm and the smaller ones have strategic implications.

Both new technology ventures and innovations introduced by established firms have a high failure rate. This can be explained as a failure to successfully cross the chasm from the early users to the mass market because the firm does not recognize that the business strategy needs to be fine-tuned for each customer segment. Formulating a business strategy for each segment guided by the *who, what, why, and how* questions of competition (Who to serve? What needs to satisfy? Why and how to satisfy them?), introduced in Chapter 6, the firm will find that the core competencies to satisfy each of the different customer segments are quite different. If not recognized and addressed, this will lead to the demise of the innovation as it crashes into the chasm between life cycle stages.

We first introduce each customer group and map it to the respective stage of the industry life cycle. To illustrate, we then apply the chasm framework to an analysis of the mobile phone industry.

**TECHNOLOGY ENTHUSIASTS.** The customer segment in the introductory stage of the industry life cycle is called *technology enthusiasts*.<sup>46</sup> The smallest market segment, it makes up some 2.5 percent of total market potential. Technology enthusiasts often have an engineering mind-set and pursue new technology proactively. They frequently seek out new products before the products are officially introduced into the market. Technology enthusiasts enjoy using beta versions of products, tinkering with the product's imperfections and providing (free) feedback and suggestions to companies. For example, many software companies such as Google and Microsoft launch beta versions to accumulate customer feedback to work out bugs before the official launch. Moreover, technology enthusiasts will often pay a premium price to have the latest gadget. The endorsement by technology enthusiasts validates the fact that the new product does in fact work.

A recent example of an innovation that appeals to technology enthusiasts is Google Glass, a mobile computer that is worn like a pair of regular glasses. Instead of a lens,



however, one side displays a small, high-definition computer screen. Google Glass was developed as part of Google's wild-card program. Technology enthusiasts were eager to get ahold of Google Glass when made available in a beta testing program in 2013.

Those interested had to compose a Google+ or Twitter message of 50 words or less explaining why they would be a good choice to test the device and include the hashtag #ifihadglass. Some 150,000 people applied and 8,000 winners were chosen. They were required to attend a Google Glass event and pay \$1,500 for the developer version of Google Glass.

Although many industry leaders, including Apple CEO Tim Cook, agree that wearable computers such as the Apple Watch or the Fitbit (a physical activity tracker that is worn on the wrist; data are integrated into an online community and phone app) are important mobile devices, they suggest that there is a large chasm between the current technology for computerized eyeglasses and a successful product for early adopters let alone the mass market.<sup>47</sup> They seem to be correct, because Google was until now unable to cross the chasm between technology enthusiasts and early adopters, even after spending \$10 billion on R&D per year.<sup>48</sup>



Google Glass allows the wearer to use the internet and smartphone-like applications via voice commands (e.g., conduct online search, stream video, and so on).

©AP Images/Google/REX

**EARLY ADOPTERS.** The customers entering the market in the growth stage are *early adopters*. They make up roughly 13.5 percent of the total market potential. Early adopters, as the name suggests, are eager to buy early into a new technology or product concept. Unlike technology enthusiasts, however, their demand is driven by their imagination and creativity rather than by the technology per se. They recognize and appreciate the possibilities the new technology can afford them in their professional and personal lives. Early adopters' demand is fueled more by intuition and vision rather than technology concerns. These are the people that lined up at Apple Stores in the spring of 2015 when it introduced Apple Watch. Since early adopters are not influenced by standard technological performance metrics but by intuition and imagination (What can this new product do for me or my business?), the firm needs to communicate the product's potential applications in a more direct way than when it attracted the initial technology enthusiasts. Attracting the early adopters to the new offering is critical to opening any new high-tech market segment.

**EARLY MAJORITY.** The customers coming into the market in the shakeout stage are called *early majority*. Their main consideration in deciding whether or not to adopt a new technological innovation is a strong sense of practicality. They are pragmatists and are most concerned with the question of what the new technology can do for them. Before adopting a new product or service, they weigh the benefits and costs carefully. Customers in the early majority are aware that many hyped product introductions will fade away, so they prefer to wait and see how things shake out. They like to observe how early adopters are using the product. Early majority customers rely on endorsements by others. They seek out reputable references such as reviews in prominent trade journals or in magazines such as *Consumer Reports*.



Tesla Motors CEO Elon Musk (left) in front of a Tesla Roadster; Fisker Automotive CEO Henrik Fisker (right) in front of a Fisker Karma.

©Misha Gravenor



Because the early majority makes up roughly one-third of the entire market potential, winning them over is critical to the commercial success of the innovation. They are on the cusp of the mass market. Bringing the early majority on board is the key to catching the growth wave of the industry life cycle. Once they decide to enter the market, a *herding effect* is frequently observed: The early majority enters in large numbers.<sup>49</sup>

The significant differences in the attitudes toward technology of the early majority when compared to the early adopters signify the wide competitive gulf—the *chasm*—between these two consumer segments (see Exhibit 7.8). Without adequate demand from the early majority, most innovative products wither away.

Fisker Automotive, a California-based designer and manufacturer of premium plug-in hybrid vehicles, fell into the chasm because it was unable to transition to early adopters, let alone the mass market. Between its founding in 2007 and 2012, Fisker sold some 1,800 of its Karma model, a \$100,000 sports car, to technology enthusiasts. It was unable, however, to follow up with a lower-cost model to attract the early adopters into the market. In addition, technology and reliability issues for the Karma could not be overcome. By 2013, Fisker had crashed into the first chasm (between technology enthusiasts and early adopters), filing for bankruptcy. The assets of Fisker Automotive were purchased by Wanxiang, a Chinese auto parts maker.<sup>50</sup>

In contrast, Tesla, the maker of all-electric vehicles introduced in ChapterCase 1 and a fierce rival of Fisker at one time, was able to overcome some of the early chasms. The Tesla Roadster was a proof-of-concept car that demonstrated that electric vehicles could achieve an equal or better performance than the very best gasoline-engine sports cars. The 2,400 Roadsters that Tesla built between 2008 and 2012 were purchased by technology enthusiasts. Next, Tesla successfully launched the Model S, a family sedan, sold to early adopters. The Tesla Model S received a strong endorsement as the 2013 *Motor Trend* Car of the Year and the highest test scores ever awarded by *Consumer Reports*. This may help in crossing the chasm to the early majority, because consumers would now feel more comfortable in considering and purchasing a Tesla vehicle. Tesla is hoping to cross the large competitive chasm between early adopters and early majority with its new, lower-priced Model 3.

**LATE MAJORITY** The next wave of growth comes from buyers in the *late majority* entering the market in the maturity stage. Like the early majority, they are a large customer

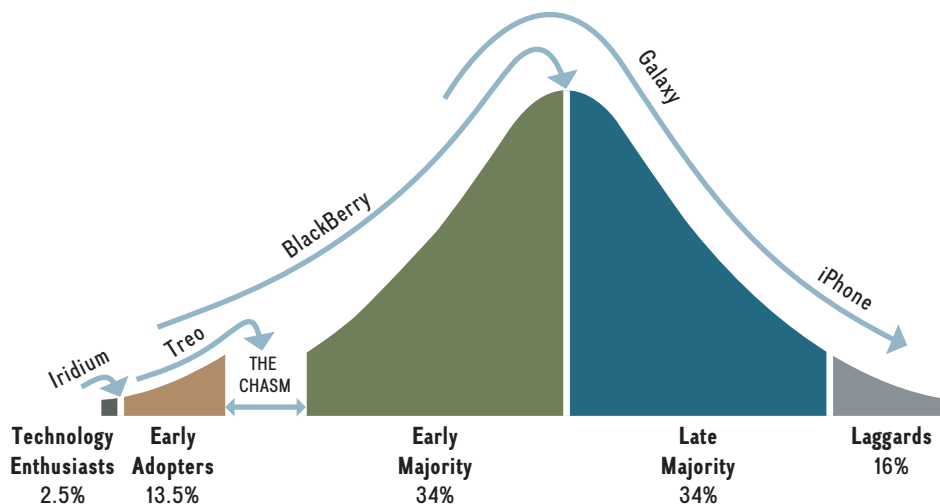
segment, making up approximately 34 percent of the total market potential. Combined, the early majority and late majority make up the lion's share of the market potential. Demand coming from just two groups—early and late majority—drives most industry growth and firm profitability.

Members of the early and late majority are also quite similar in their attitudes toward new technology. The late majority shares all the concerns of the early majority. But there are also important differences. Although members of the early majority are confident in their ability to master the new technology, the late majority is not. They prefer to wait until standards have emerged and are firmly entrenched, so that uncertainty is much reduced. The late majority also prefers to buy from well-established firms with a strong brand image rather than from unknown new ventures.

**LAGGARDS.** Finally, *laggards* are the last consumer segment to come into the market, entering in the declining stage of the industry life cycle. These are customers who adopt a new product only if it is absolutely necessary, such as first-time cell phone adopters in the United States today. These customers generally don't want new technology, either for personal or economic reasons. Given their reluctance to adopt new technology, they are generally not considered worth pursuing. Laggards make up no more than 16 percent of the total market potential. Their demand is far too small to compensate for reduced demand from the early and late majority (jointly almost 70 percent of total market demand), who are moving on to different products and services.

**CROSSING THE CHASM: APPLICATION TO THE MOBILE PHONE INDUSTRY.** Let's apply the crossing-the-chasm framework to one specific industry. In this model, the transition from stage to stage in the industry life cycle is characterized by different competitive chasms that open up because of important differences between customer groups. Although the large chasm between early adopters and the early majority is the main cause of demise for technological innovations, other smaller mini-chasms open between each stage.

Exhibit 7.9 shows the application of the chasm model to the mobile phone industry. The first victim was Motorola's Iridium, an ill-fated satellite-based telephone system.<sup>51</sup> Development began in 1992 after the spouse of a Motorola engineer complained about being unable to get any data or voice access to check on clients while vacationing



**EXHIBIT 7.9** /  
Crossing the Chasm: The  
Mobile Phone Industry

on a remote island. Motorola's solution was to launch 66 satellites into low orbit to provide global voice and data coverage. In late 1998, Motorola began offering its satellite phone service, charging \$5,000 per handset (which was almost too heavy to carry around) and up to \$14 per minute for calls.<sup>52</sup> Problems in consumer adoption beyond the few technology enthusiasts became rapidly apparent. The Iridium phone could not be used inside buildings or in cars. Rather, to receive a satellite signal, the phone needed an unobstructed line of sight to a satellite. Iridium crashed into the first chasm, never moving beyond technology enthusiasts (see Exhibit 7.9). For Motorola, it was a billion-dollar blunder. Iridium was soon displaced by cell phones that relied on Earth-based networks of radio towers. The global satellite telephone industry never moved beyond the introductory stage of the industry life cycle.

The first Treo, a fully functioning smartphone combining voice and data capabilities, was released in 2002 by Handspring. The Treo fell into the main chasm that arises between early adopters and the early majority (see Exhibit 7.9). Technical problems, combined with a lack of apps and an overly rigid contract with Sprint as its sole service provider, prevented the Treo from gaining traction in the market beyond early adopters. For these reasons, the Treo was not an attractive product for the early majority, who rejected it. This caused the Treo to plunge into the chasm. Just a year later, Handspring was folded into Palm, which in turn was acquired by HP for \$1 billion in 2010.<sup>53</sup> HP shut down Palm in 2011 and wrote off the acquisition.<sup>54</sup>

BlackBerry (formerly known as Research in Motion or RIM)<sup>55</sup> introduced its first fully functioning smartphone in 2000. It was a huge success—especially with two key consumer segments. First, corporate IT managers were early adopters. They became product champions for the BlackBerry smartphone because of its encrypted security software and its reliability in always staying connected to a company's network. This allowed users to receive e-mail and other data in real time, anywhere in the world where wireless service was provided. Second, corporate executives were the early majority pulling the BlackBerry smartphone over the chasm because it allowed 24/7 access to data and voice. BlackBerry was able to create a beachhead to cross the chasm between the technology enthusiasts and early adopters on one side and the early majority on the other.<sup>56</sup> BlackBerry's managers identified the needs of not only early adopters (e.g., IT managers) but also the early majority (e.g., executives), who pulled the BlackBerry over the chasm. By 2005, the BlackBerry had become a corporate executive status symbol. As a consequence of capturing the first three stages of the industry life cycle, between 2002 and 2007, BlackBerry enjoyed no less than 30 percent year-over-year revenue growth as well as double-digit growth in other financial performance metrics such as return on equity. BlackBerry enjoyed a temporary competitive advantage.

In 2007, BlackBerry's dominance over the smartphone market began to erode quickly. The main reason was Apple's introduction of the iPhone. Although technology enthusiasts and early adopters argue that the iPhone is an inferior product to the BlackBerry based on technological criteria, the iPhone enticed not only the early majority, but also the late majority to enter the market. For the late majority, encrypted software security was much less important than having fun with a device that allowed users to surf the web, take pictures, play games, and send and receive e-mail. Moreover, the Apple iTunes Store soon provided thousands of apps for basically any kind of service. While the BlackBerry couldn't cross the gulf between the early and the late majority, Apple's iPhone captured the mass market rapidly. Moreover, consumers began to bring their personal iPhone to work, which forced corporate IT departments to expand their services beyond the BlackBerry. Apple rode the wave of this success to capture each market segment. Likewise, Samsung with its Galaxy line of phones, having successfully imitated the look-and-feel of an

iPhone (as discussed in Chapter 4), is enjoying similar success across the different market segments.

This brief application of the chasm framework to the mobile phone industry shows its usefulness. It provides insightful explanations of why some companies failed, while others succeeded—and thus goes at the core of strategy management.

In summary, Exhibit 7.10 details the features and strategic implications of the entire industry life cycle at each stage.

A word of caution is in order, however: Although the industry life cycle is a useful framework to guide strategic choice, industries do not *necessarily evolve* through these stages. Moreover, innovations can emerge at any stage of the industry life cycle, which in turn can initiate a new cycle. Industries can also be rejuvenated, often in the declining stage.

Although the industry life cycle is a useful tool, it does not explain everything about changes in industries. Some industries may never go through the entire life cycle, while others are continually renewed through innovation. Be aware, too, that other external factors that can be captured in the PESTEL framework (introduced in Chapter 3) such as fads

**EXHIBIT 7.10** / Features and Strategic Implications of the Industry Life Cycle

Life Cycle Stages					
	Introduction	Growth	Shakeout	Maturity	Decline
Core Competency	R&D, some marketing	R&D, some manufacturing, marketing	Manufacturing, process engineering	Manufacturing, process engineering, marketing	Manufacturing, process engineering, marketing, service
Type and Level of Innovation	Product innovation at a maximum; process innovation at a minimum	Product innovation decreasing; process innovation increasing	After emergence of standard: product innovation decreasing rapidly; process innovation increasing rapidly	Product innovation low; process innovation high	Product innovation at a minimum; process innovation at a maximum
Market Growth	Slow	High	Moderate and slowing down	None to moderate	Negative
Market Size	Small	Moderate	Large	Largest	Small to moderate
Price	High	Falling	Moderate	Low	Low to high
Number of Competitors	Few, if any	Many	Fewer	Moderate, but large	Few, if any
Mode of Competition	Non-price competition	Non-price competition	Shifting from non-price to price competition	Price	Price or non-price competition
Type of Buyers	Technology enthusiasts	Early adopters	Early majority	Late majority	Laggards
Business-Level Strategy	Differentiation	Differentiation	Differentiation, or integration strategy	Cost-leadership or integration strategy	Cost-leadership, differentiation, or integration strategy
Strategic Objective	Achieving market acceptance	Staking out a strong strategic position; generating “deep pockets”	Surviving by drawing on “deep pockets”	Maintaining strong strategic position	Exit, harvest, maintain, or consolidate

in fashion, changes in demographics, or deregulation can affect the dynamics of industry life cycles at any stage.

It is also important to note that innovations that failed initially can sometimes get a second chance in a new industry or for a new application. When introduced in the early 1990s as an early wireless telephone system, Iridium's use never went beyond that by technology enthusiasts. After Motorola's failure, the technology was spun out as a standalone venture called Iridium Communications. As of 2017, it looks like Iridium's satellite-based communications system will get another chance of becoming a true breakthrough innovation.<sup>57</sup> Rather than in an application in the end-consumer market, this time Iridium is considered for global deployment by airspace authorities to allow real-time tracking of airplanes wherever they may be. The issue of being able to track airplanes around the globe at all times came to the fore in 2014, when Malaysia Airlines Flight 370 with 239 people on board disappeared without a trace, and authorities were unable to locate the airplane.

For the last few decades, air controllers had to rely on ground-based radar to direct planes and to triangulate their positions. A major problem with any ground-based system is that it only works over land or near the shore, but not over oceans, which cover more than 70 percent of the Earth's surface. Moreover, radar does not work in mountain ranges. Oceans and mountain terrain, therefore, are currently dead zones where air traffic controllers are unable to track airplanes.

Iridium's technology is now used as a space-based flight tracking system. In 2017, Elon Musk's SpaceX launched the first set of 10 satellites (out of a total of 66 needed) into space to begin constructing a space-based air traffic control system. Such a system affords air traffic controllers full visibility of and real-time flight information from any airplane over both water and land. It also allows pilots more flexibility in changing routes to avoid bad weather and turbulence, thus increasing passenger convenience, saving fuel, and reducing greenhouse-gas emissions. In addition, the new technology, called Aireon, would allow planes to fly closer together (15 miles apart instead of the now customary 80 miles), allowing for more air traffic on efficient routes. A research study by an independent body predicts that global deployment of Aireon would also lead to a substantial improvement in air safety.

Providing the next-generation air traffic control technology and services is a huge business opportunity for Iridium Communications. National air traffic control agencies will be the main customers to deploy the new Aireon technology. This goes to show that a second chance of success for an innovation may arise, even after the timing and application of an initial technology were off.

#### LO 7-5

Categorize different types of innovations in the markets-and-technology framework.

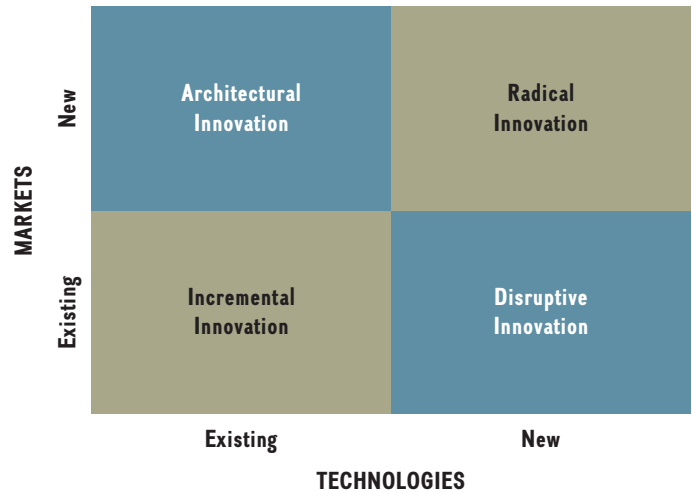
## 7.4 Types of Innovation

Because of the importance of innovation in shaping competitive dynamics and as a critical component in formulating business strategy, we now turn to a discussion of different types of innovation and the strategic implications of each. We need to know, in particular, along which dimensions we should assess innovations. This will allow us to formulate a business strategy that can leverage innovation for competitive advantage.

One insightful way to categorize innovations is to measure their degree of newness in terms of *technology* and *markets*.<sup>58</sup> Here, *technology* refers to the methods and materials used to achieve a commercial objective.<sup>59</sup> For example, Amazon integrates different types of technologies (hardware, software, big data analytics, cloud computing, logistics, and so on) to provide not only the largest selection of retail goods online, but also an array of services and mobile devices (e.g., Alexa, a digital personal assistant;

Kindle tablets; Prime; cloud-computing services; and so on). We also want to understand the *market* for an innovation—e.g., whether an innovation is introduced into a new or an existing market—because an invention turns into an innovation only when it is successfully commercialized.<sup>60</sup> Measuring an innovation along these dimensions gives us the **markets-and-technology framework** depicted in Exhibit 7.11. Along the horizontal axis, we ask whether the innovation builds on existing technologies or creates a new one. On the vertical axis, we ask whether the innovation is targeted toward existing or new markets. Four types of innovations emerge: incremental, radical, architectural, and disruptive innovations. As indicated by the color coding in Exhibit 7.11, each diagonal forms a pair: incremental versus radical innovation and architectural versus disruptive innovation.

**EXHIBIT 7.11** / Types of Innovation: Combining Markets and Technologies



## INCREMENTAL VS. RADICAL INNOVATION

Although radical breakthroughs such as smartphones and magnetic resonance imaging (MRI) radiology capture most of our attention, the vast majority of innovations are actually incremental ones. An **incremental innovation** squarely builds on an established knowledge base and steadily improves an existing product or service offering.<sup>61</sup> It targets existing markets using existing technology.

On the other hand, **radical innovation** draws on novel methods or materials, is derived either from an entirely different knowledge base or from a recombination of existing knowledge bases with a new stream of knowledge. It targets new markets by using new technologies.<sup>62</sup> Well-known examples of radical innovations include the introduction of the mass-produced automobile (the Ford Model T), the X-ray, the airplane, and more recently biotechnology breakthroughs such as genetic engineering and the decoding of the human genome.

Many firms get their start by successfully commercializing radical innovations, some of which, such as the jet-powered airplane, even give birth to new industries. Although the British firm de Havilland first commercialized the jet-powered passenger airplane, Boeing was the company that rode this radical innovation to industry dominance. More recently, Boeing's leadership has been contested by Airbus; each company has approximately half the market. This stalemate is now being challenged by aircraft manufacturers such as Bombardier of Canada and Embraer of Brazil, which are moving up-market by building larger luxury jets that are competing with some of the smaller airplane models offered by Boeing and Airbus.

### markets-and-technology framework

A conceptual model to categorize innovations along the market (existing/new) and technology (existing/new) dimensions.

### incremental innovation

An innovation that squarely builds on an established knowledge base and steadily improves an existing product or service.

### radical innovation

An innovation that draws on novel methods or materials, is derived either from an entirely different knowledge base or from a recombination of the existing knowledge bases with a new stream of knowledge.



A predictable pattern of innovation is that firms (often new ventures) use radical innovation to create a temporary competitive advantage. They then follow up with a string of incremental innovations to sustain that initial lead. Gillette is a prime example for this pattern of strategic innovation. In 1903, entrepreneur King C. Gillette invented and began selling the safety razor with a disposable blade. This *radical innovation* launched the Gillette Co. (now a brand of Procter & Gamble). To sustain its competitive advantage, Gillette not only made sure that its razors were inexpensive and widely available by introducing the “razor and razor blade” business model, but also continually improved its blades. In a classic example of a string of *incremental innovations*, Gillette kept adding an additional blade with each new version of its razor until the number had gone from one to six! Though this innovation strategy seems predictable, it worked. Gillette’s newest razor, the Fusion ProGlide with Flexball technology, a razor handle that features a swiveling ball hinge, costs \$11.49 (and \$12.59 for a battery-operated one) *per razor*! <sup>63</sup> Dollar Shave Club is disrupting Gillette’s business model based on incremental innovation. As a result, Gillette’s market share in the \$15 billion wet shaving industry has declined from some 70 percent (in 2010) to below 60 percent (by 2017). <sup>64</sup>

The Gillette example, nonetheless, shows how radical innovation created a competitive advantage that the company can sustain through follow-up incremental innovation. Such an outcome is not a foregone conclusion, though. In some instances, the innovator is outcompeted by second movers that quickly introduce a similar incremental innovation to continuously improve their own offering. For example, although CNN was the pioneer in 24-hour cable news, today Fox News is the most watched cable news network in the United States (although the entire industry is in decline as viewers now stream much more content directly via mobile devices, as discussed in ChapterCase 7 about Netflix). Once firms have achieved market acceptance of a breakthrough innovation, they tend to follow up with incremental rather than radical innovations. Over time, these companies morph into industry incumbents. Future radical innovations are generally introduced by new entrepreneurial ventures. Why is this so? The reasons concern *economic incentives*, *organizational inertia*, and the firm’s embeddedness in an *innovation ecosystem*. <sup>65</sup>

**ECONOMIC INCENTIVES.** Economists highlight the role of *incentives* in strategic choice. Once an innovator has become an established incumbent firm (such as Google has today), it has strong incentives to defend its strategic position and market power. An emphasis on incremental innovations strengthens the incumbent firm’s position and thus maintains high entry barriers. A focus on incremental innovation is particularly attractive once an industry standard has emerged and technological uncertainty is reduced. Moreover, many markets where network effects are important (such as online search), turn into **winner-take-all markets**, where the market leader captures almost all of the market share. As a near monopolist, the winner in these types of markets is able to extract a significant amount of the value created. In the United States, Google handles some 65 percent of all online queries, while it handles more than 90 percent in Europe. As a result, the incumbent firm uses incremental innovation to extend the time it can extract profits based on a favorable industry structure (see the discussion in Chapter 3). Any potential radical innovation threatens the incumbent firm’s dominant position.

The incentives for entrepreneurial ventures, however, are just the opposite. Successfully commercializing a radical innovation is frequently the only option to enter an industry protected by high entry barriers. One of the first biotech firms, Amgen, used newly discovered drugs based on genetic engineering to overcome entry barriers to the pharmaceutical

**winner-take-all markets** Markets where the market leader captures almost all of the market share and is able to extract a significant amount of the value created.

industry, in which incumbents had enjoyed notoriously high profits for several decades. Because of differential economic incentives, incumbents often push forward with incremental innovations, while new entrants focus on radical innovations.

**ORGANIZATIONAL INERTIA.** From an organizational perspective, as firms become established and grow, they rely more heavily on formalized business processes and structures. In some cases, the firm may experience *organizational inertia*—resistance to changes in the status quo. Incumbent firms, therefore, tend to favor incremental innovations that reinforce the existing organizational structure and power distribution while avoiding radical innovation that could disturb the existing power distribution. Take, for instance, power distribution between different functional areas, such as R&D and marketing. New entrants, however, do not have formal organizational structures and processes, giving them more freedom to launch an initial breakthrough. We discuss the link between organizational structure and firm strategy in depth in Chapter 11.

**INNOVATION ECOSYSTEM.** A final reason incumbent firms tend to be a source of incremental rather than radical innovations is that they become embedded in an **innovation ecosystem**: a network of suppliers, buyers, complementors, and so on.<sup>66</sup> They no longer make independent decisions but must consider the ramifications on other parties in their innovation ecosystem. Continuous incremental innovations reinforce this network and keep all its members happy, while radical innovations disrupt it. Again, new entrants don't have to worry about preexisting innovation ecosystems, since they will be building theirs around the radical innovation they are bringing to a new market.

**innovation ecosystem**  
A firm's embeddedness in a complex network of suppliers, buyers, and complementors, which requires interdependent strategic decision making.

## ARCHITECTURAL VS. DISRUPTIVE INNOVATION

Firms can also innovate by leveraging *existing technologies* into *new markets*. Doing so generally requires them to reconfigure the components of a technology, meaning they alter the overall *architecture* of the product.<sup>67</sup> An **architectural innovation**, therefore, is a new product in which known components, based on existing technologies, are reconfigured in a novel way to create new markets.

As a radical innovator commercializing the xerography invention, Xerox was long the most dominant copier company worldwide.<sup>68</sup> It produced high-volume, high-quality, and high-priced copying machines that it leased to its customers through a service agreement. Although these machines were ideal for the high end of the market such as Fortune 100 companies, Xerox ignored small and medium-sized businesses. By applying an architectural innovation, the Japanese entry Canon was able to redesign the copier so that it didn't need professional service—reliability was built directly into the machine, and the user could replace parts such as the cartridge. This allowed Canon to apply the *razor-razor-blade business model* (introduced in Chapter 5), charging relatively low prices for its copiers but adding a steep markup to its cartridges. Xerox had not envisioned the possibility that the components of the copying machine could be put together in an altogether different way that was more user-friendly. More importantly, Canon addressed a need in a specific consumer segment—small and medium-sized businesses and individual departments or offices in large companies—that Xerox neglected.

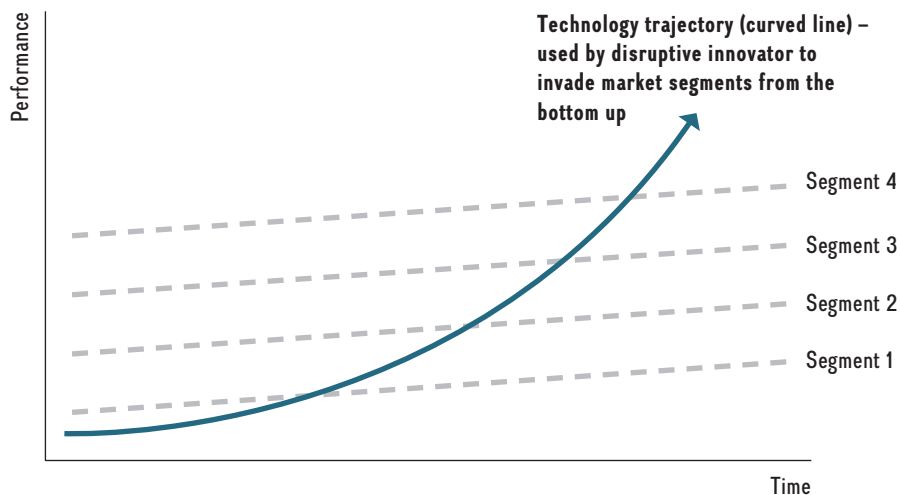
Finally, a **disruptive innovation** leverages *new technologies* to attack *existing markets*. It invades an existing market from the bottom up, as shown in Exhibit 7.12.<sup>69</sup> The dashed lines represent different market segments, from Segment 1 at the low end to Segment 4 at the high end. Low-end market segments are generally associated with low profit margins,

**architectural innovation**  
A new product in which known components, based on existing technologies, are reconfigured in a novel way to attack new markets.

**disruptive innovation**  
An innovation that leverages new technologies to attack existing markets from the bottom up.

**EXHIBIT 7.12**

Disruptive Innovation: Riding the Technology Trajectory to Invade Different Market Segments from the Bottom Up



while high-end market segments often have high profit margins. As first demonstrated by Clayton Christensen, the dynamic process of disruptive innovation begins when a firm, frequently a startup, introduces a new product or process based on a new technology to meet existing customer needs. To be a disruptive force, however, this new technology has to have additional characteristics:

1. It begins as a low-cost solution to an existing problem.
2. Initially, its performance is inferior to the existing technology, but its rate of technological improvement over time is faster than the rate of performance increases required by different market segments. In Exhibit 7.12, the solid upward curved line captures the new technology's trajectory, or rate of improvement over time.

The following examples illustrate disruptive innovations:

- Japanese carmakers successfully followed a strategy of disruptive innovation by first introducing small fuel-efficient cars and then leveraging their low-cost and high-quality advantages into high-end luxury segments, captured by brands such as Lexus, Infiniti, and Acura. More recently, the South Korean carmakers Kia and Hyundai have followed a similar strategy.
- Digital photography improved enough over time to provide higher-definition pictures. As a result, it has been able to replace film photography, even in most professional applications.
- Laptop computers disrupted desktop computers; now tablets and larger-screen smartphones are disrupting laptops.
- Educational organizations such as Coursera and Udacity are disrupting traditional universities by offering *massive open online courses* (MOOCs), using the web to provide large-scale, interactive online courses with open access.

One factor favoring the success of disruptive innovation is that it relies on a stealth attack: It invades the market from the bottom up, by first capturing the low end. Many times, incumbent firms fail to defend (and sometimes are even happy to cede) the low end of the market, because it is frequently a low-margin business. Google, for example, is using its mobile operating system, Android, as a beachhead to challenge Microsoft's dominance in the personal computer industry, where 90 percent of machines run Windows.<sup>70</sup> Google's

Android, in contrast, is optimized to run on mobile devices, the fastest-growing segment in computing. To appeal to users who spend most of their time on the web accessing e-mail and other online applications, for instance, it is designed to start in a few seconds. Moreover, Google provides Android free of charge.<sup>71</sup> In contrast to Microsoft's proprietary Windows operating system, Android is open-source software, accessible to anyone for further development and refinement. Google's Android holds an 85 percent market share in mobile operating systems, while Apple's iOS has 12 percent, and the remaining 3 percent is held by Microsoft's Windows.<sup>72</sup>

Another factor favoring the success of disruptive innovation is that incumbent firms often are slow to change. Incumbent firms tend to listen closely to their current customers and respond by continuing to invest in the existing technology and in incremental changes to the existing products. When a newer technology matures and proves to be a better solution, those same customers will switch. At that time, however, the incumbent firm does not yet have a competitive product ready that is based on the disruptive technology. Although customer-oriented visions are more likely to guard against firm obsolescence than product-oriented ones (see Chapter 2), they are no guarantee that a firm can hold out in the face of disruptive innovation. One of the counterintuitive findings that Clayton Christensen unearthed in his studies is that it can hurt incumbents to listen too closely to their existing customers. Apple is famous for not soliciting customer feedback because it believes it knows what customers need before they even realize it.

Netflix, featured in the ChapterCase, disrupted the television industry from the bottom up (as shown in Exhibit 7.12) with its online streaming video-on-demand service. Netflix's streaming service differentiated itself from cable television by making strategic trade-offs. By initially focusing on older "rerun TV" (such as *Breaking Bad*) and not including local content or exorbitant expensive live sport events, Netflix was able to price its subscription service considerably lower than cable bundles. Netflix improved the viewing experience by allowing users to watch shows and movies without commercial breaks and on-demand, thus enhancing perceived consumer value. By switching quickly from sending DVDs via postal mail to online streaming, Netflix was able to ride the upward-sloping technology trajectory (shown in Exhibit 7.12) to invade the media industry from the bottom up, all the way to providing premium original content such as *House of Cards*. Netflix's pivot to online streaming was aided by increased technology diffusion (see Exhibit 7.1) as more and more Americans adopted broadband internet connections in the early 2000s.

**HOW TO RESPOND TO DISRUPTIVE INNOVATION?** Many incumbents tend to dismiss the threat by startups that rely on disruptive innovation because initially their product or service offerings are considered low end and too niche-focused. As late as 2010 (the year Blockbuster filed for bankruptcy), the CEO of Time Warner, one of the incumbent media companies to be disrupted by Netflix, did not take it seriously. When asked about the online streaming service as a potential competitor, he ridiculed the threat as equivalent to the likelihood of the Albanian army taking over the entire world.<sup>73</sup> It is critical to have an effective response to disruptive innovation.

Although the examples in the previous section show that disruptive innovations are a serious threat for incumbent firms, some have devised strategic initiatives to counter them:

1. *Continue to innovate in order to stay ahead of the competition.* A moving target is much harder to hit than one that is standing still and resting on existing (innovation) laurels. Amazon is an example of a company that has continuously morphed through innovation,<sup>74</sup> from a simple online book retailer to the largest ecommerce company, and now to include stores on the ground in the grocery sector. It also offers a personalized digital assistant (Alexa), consumer electronics (Kindle tablets), cloud computing,

and content streaming, among other many other offerings (see ChapterCase 8). Netflix continued to innovate by pivoting to online streaming and away from sending DVDs through the mail.

2. *Guard against disruptive innovation by protecting the low end of the market* (Segment 1 in Exhibit 7.12) by introducing low-cost innovations to preempt stealth competitors. Intel introduced the Celeron chip, a stripped-down, budget version of its Pentium chip, to prevent low-cost entry into its market space. More recently, Intel followed up with the Atom chip, a new processor that is inexpensive and consumes little battery power, to power low-cost mobile devices.<sup>75</sup> Nonetheless, Intel also listened too closely to its existing personal computer customers such as Dell, HP, Lenovo, and so on, and allowed ARM Holdings, a British semiconductor design company (that supplies its technology to Apple, Samsung, HTC, and others) to take the lead in providing high-performing, low-power-consuming processors for smartphones and other mobile devices.
3. *Disrupt yourself, rather than wait for others to disrupt you.* A firm may develop products specifically for emerging markets such as China and India, and then introduce these innovations into developed markets such as the United States, Japan, or the European Union. This process is called **reverse innovation**,<sup>76</sup> and allows a firm to disrupt itself. Strategy Highlight 7.2 describes how GE Healthcare invented and commercialized a disruptive innovation in China that is now entering the U.S. market, riding the steep technology trajectory of disruptive innovation shown in Exhibit 7.12.

**reverse innovation** An innovation that was developed for emerging economies before being introduced in developed economies. Sometimes also called *frugal innovation*.

## Strategy Highlight 7.2

### GE's Innovation Mantra: Disrupt Yourself!

GE Healthcare is a leader in diagnostic devices. Realizing that the likelihood of disruptive innovation increases over time, GE decided to disrupt itself. A high-end ultrasound machine found in cutting-edge research hospitals in the United States or Europe costs \$250,000. There is not a large market for these high-end, high-price products in developing countries. Given their large populations, however, these countries have a strong medical need for ultrasound devices.

In 2002, a GE team in China, through a bottom-up strategic initiative, developed an inexpensive, portable ultrasound device, combining laptop technology with a probe and sophisticated imaging software. This lightweight device (11 pounds) was first used in rural China. In spring 2009, GE unveiled the new medical device under the name Venue 40 in the United States, at a price of less than \$30,000. There was also high demand from many American general practitioners, who could not otherwise afford the \$250,000 needed to procure a high-end machine (that weighed about 400 pounds). In the fall of 2009, then GE Chairman and CEO Jeff Immelt



GE's Vscan is a wireless ultrasound device priced around \$5,000.  
©VCG/Getty Images News/ Getty Images

unveiled the Vscan, an even smaller device that looks like a cross between an early iPod and a flip phone. This wireless ultrasound device is priced around \$5,000. GE views the Vscan as the "stethoscope of the 21st century," which a primary care doctor can hang around her neck when visiting with patients.<sup>77</sup>



## 7.5 Platform Strategy

Up to this point in our discussion of strategy and competitive advantage, we focused mainly on businesses that operate at one or more stages of the linear value chain (introduced in Chapter 4).

A firm's value chain captures the internal activities a firm engages in, beginning with raw materials and ending with retailing and after-sales service and support. The value chain represents a linear view of a firm's business activities. As such, this traditional system of horizontal business organization has been described as a *pipeline*, because it captures a linear transformation with producers at one end and consumers at the other. Take BlackBerry as an example of a business using a linear pipeline approach based on a step-by-step arrangement for creating and transferring value. This Canadian ex-leader in smartphones conducted internal R&D, designed the phones, then manufactured them (often in company-owned plants), and finally retailed them in partner stores such as AT&T or Verizon, which offered wireless services and after-sales support.

### LO 7-6

Explain why and how platform businesses can outperform pipeline businesses.

## THE PLATFORM VS. PIPELINE BUSINESS MODELS

Read the examples below, and try to figure out how these businesses' operations differ from the traditional pipeline structure described earlier.<sup>78</sup>

- Valued at \$70 billion in 2017, the ride-hailing service Uber was launched less than 10 years earlier in a single city, San Francisco. Uber is not only disrupting the traditional taxi and limousine business in hundreds of cities around the globe, but also reshaping the transportation and logistics industries, without owning a single car. In the future, Uber might deploy a fleet of driverless cars; it is currently testing autonomous vehicles.
- Reaching close to 2 billion people (out of a total of 7 billion on Earth), Facebook is where people get their news, watch videos, listen to music, and share photos. Garnering some \$30 billion in annual advertising revenues in 2016, Facebook has become one of the largest media companies in the world, without producing a single piece of content.
- China-based ecommerce firm Alibaba is the largest web portal that offers online retailing as well as business-to-business services on a scale that dwarfs Amazon.com and eBay combined. On its Taobao site (similar to eBay), Alibaba offers more than 1 billion products, making it the world's largest retailer without owning a single item of inventory. When going public in 2014 by listing on the New York Stock Exchange (NYSE), Alibaba was the world's largest initial public offering (IPO), valued at \$25 billion. Not even three years later, by early 2017, Alibaba was valued at some \$260 billion, making it one of the most valuable technology companies in the world.

What do Uber, Facebook, and Alibaba have in common? They are *not* organized as traditional linear pipelines, but instead as a **platform businesses**. The five most valuable companies globally (Apple, Alphabet, Microsoft, Amazon, and Facebook) all run platform business models. ExxonMobil, running a traditional linear business model from raw materials (fossil fuels) to distribution (of refined petroleum products) and long the most valuable company in the world, had fallen to number six by 2016.<sup>79</sup> Based on the 2016 book *Platform Revolution* by Parker, Van Alstyne, and Choudary, platforms can be defined along three dimensions:

1. A platform is a business that enables value-creating interactions between external producers and consumers.

**platform business** An enterprise that creates value by matching external producers and consumers in a way that creates value for all participants, and that depends on the infrastructure or platform that the enterprise manages.



2. The platform's overarching purpose is to consummate matches among users and facilitate the exchange of goods, services, or social currency, thereby enabling value creation for all participants.
3. The platform provides an infrastructure for these interactions and sets governance conditions for them.

The business phenomenon of platforms, however, is not a new one. *Platforms*, often also called *multi-sided markets*, have been around for millennia. The town squares in ancient cities were marketplaces where sellers and buyers would meet under a set of governing rules determined by the owner or operator (such as what type of wares could be offered, when the marketplace was open for business, which vendor would get what stand on the square, etc.). The credit card, often hailed as the most important innovation in the financial sector over the last few decades,<sup>80</sup> provides a more recent example of a multi-sided market. Credit cards facilitate more frictionless transactions between vendors and customers because the vendor is guaranteed payment by the bank that issues the credit card, and customers using credit cards can easily transact online without the need to carry cash in the physical world. In addition, credit card users can buy goods or services on credit based on their promise of repaying the bank.

In the digital age, *platforms* are business model innovations that use technology (such as the internet, cloud computing, etc.) to connect organizations, resources, information, and people in an interactive ecosystem where value-generating transactions (such as hailing a ride on Uber, catching up on news on Facebook, or connecting a Chinese supplier to a U.S. retailer via Alibaba) can be created and exchanged. Effective use of technology allows platform firms to drastically reduce the barriers of time and space: Information is available in real time across the globe, and market exchanges can take place effectively across vast distances (i.e., China to the United States) or even in small geographic spaces (such as Tinder, a location-based dating service).

## THE PLATFORM ECOSYSTEM

**platform ecosystem**  
The market environment in which all players participate relative to the platform.

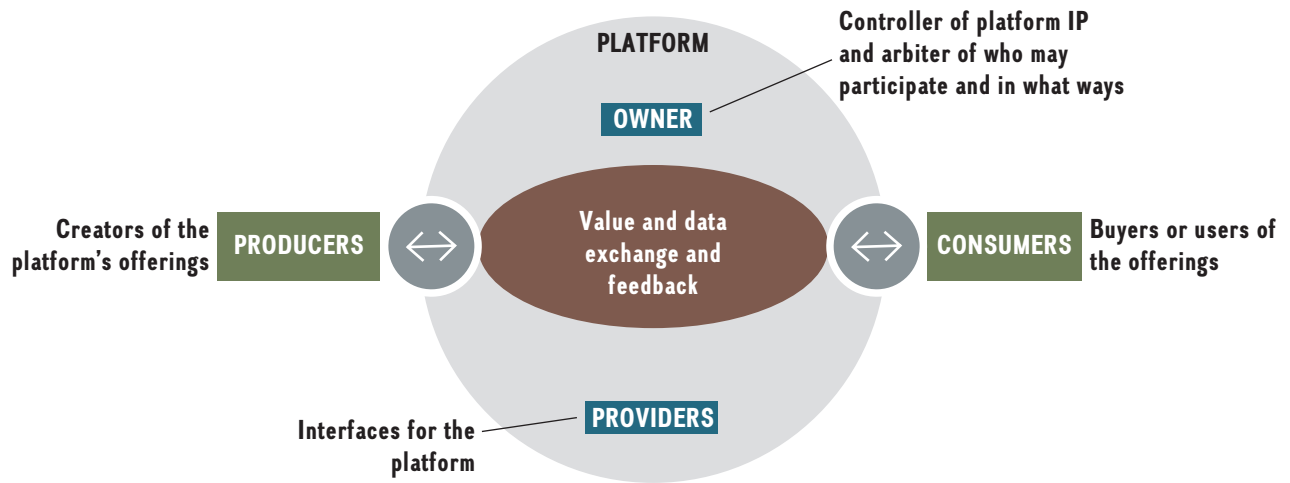
To formulate an effective platform strategy, a first step is to understand the roles of the players within any **platform ecosystem** (see Exhibit 7.13). From a value chain perspective, *producers* create or make available a product or service that *consumers* use. The *owner* of the platform controls the platform IP address and controls who may participate and in what ways. The *providers* offer the interfaces for the platform, enabling its accessibility online.

The players in the ecosystem typically fill one or more of the four roles but may rapidly shift from one role to another. For example, a producer may decide to purchase the platform to become an owner, or an owner may use the platform as a producer. Producer and consumer can also switch, for example, as when a passenger (consumer) who uses Uber for transportation decides to become an Uber driver (producer). This is an example of so-called *side switching*.

**ADVANTAGES OF THE PLATFORM BUSINESS MODEL.** *Platform businesses* tend to frequently outperform *pipeline businesses*, because of the following advantages:<sup>81</sup>

1. *Platforms scale more efficiently than pipelines by eliminating gatekeepers.* Platform businesses leveraging digital technology can also grow much faster—that is, they scale efficiently—because platforms create value by orchestrating resources that reside in the ecosystem. The platform business does not own or control these resources, facilitating rapid and often exponential growth.

In contrast, pipelines tend to be inefficient in managing the flow of information from producer to consumer. When hiring a professional services firm such as consultants or

**EXHIBIT 7.13** / The Players in a Platform Ecosystem

**SOURCE:** Adapted from Van Alstyne, M., Parker, G. G., and Choudary, S. P. (2016, Apr.) "Pipelines, Platforms, and the New Rules of Strategy," *Harvard Business Review*.

lawyers, the buyer has to purchase a bundle of services offered by the firm, for example, retaining a consulting team for a specific engagement. This team of consultants contains both senior and junior consultants, as well as administrative support staff. The client is unable to access the services of only one or two senior partners but not the rest of the team, where inexperienced junior associates are also billed at a high rate to the client. Platforms such as Upwork unbundle professional services by making available precisely defined individual services while eliminating the need to purchase a bundle of services as required by gatekeepers in old-line pipelines.

2. *Platforms unlock new sources of value creation and supply.* Consider how upstart Airbnb (featured in ChapterCase 3) disrupted the hotel industry. To grow, traditional competitors such as Marriott or Hilton would need to add additional rooms to their existing stock. To add new hotel room inventory to their chains, they would need to find suitable real estate, develop and build a new hotel, furnish all the rooms, and hire and train staff to run the new hotel. This often takes years, not to mention the multimillion-dollar upfront investments required and the risks involved.

In contrast, Airbnb faces no such constraints because it does not own any real estate, nor does it manage any hotels. Just like Marriott or Hilton, however, it uses sophisticated pricing and booking systems to allow guests to find a large variety of rooms pretty much anywhere in the world to suit their needs. As a digital platform, Airbnb allows any person to offer rooms directly to pretty much any consumer that is looking for accommodation online. Airbnb makes money by taking a cut on every rental through its platform. Given that Airbnb is a mere digital platform, it can grow much faster than old-line pipeline businesses such as Marriott. Airbnb's inventory is basically unlimited as long as it can sign up new users with spare rooms to rent, combined with very little if any cost to adding inventory to its existing online offerings. Unlike traditional hotel chains, Airbnb's growth is not limited by capital, hotel staff, or ownership of real estate. In 2017, Airbnb offered over 2 million listings worldwide for rent.

3. *Platforms benefit from community feedback.* Feedback loops from consumers back to the producers allow platforms to fine-tune their offerings and to benefit from big data

analytics. TripAdvisor, a travel website, derives significant value from the large amount of quality reviews (including pictures) by its users of hotels, restaurants, and so on. This enables TripAdvisor to consummate more effective matches between hotels and guests via its website, thus creating more value for all participants. It also allows TripAdvisor to capture a percentage of each successful transaction in the process.

Netflix also collects large amounts of data about users' viewing habits and preferences across the world. This allows Netflix to not only make effective recommendations on what to watch next, but also affords a more effective resource allocation process when making content investments. Before even producing a single episode of *House of Cards*, for example, Netflix knew that its audience would watch this series. Netflix has continued following the data, which allows the market to shape new content.

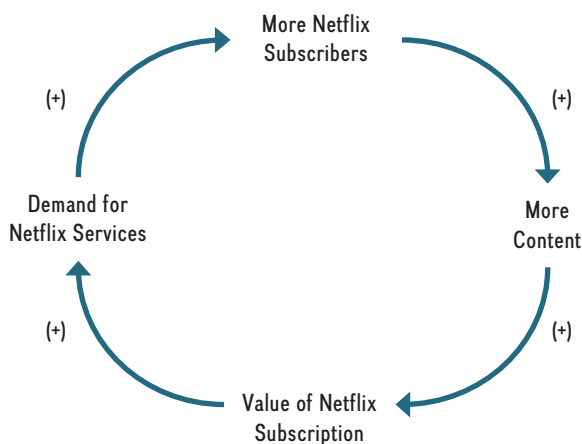
**NETWORK EFFECTS** For platform businesses to succeed, however, it is critical to benefit from positive *network effects*. We provided a brief introduction of network effects earlier when discussing how to gain a foothold for an innovation in a newly emerging industry during the introduction stage of the industry life cycle. We now take a closer look at the role of network effects in platforms, including feedback loops that can initiate virtuous growth cycles leading to platform leadership.

**Netflix.** Consider how the video-streaming service Netflix (featured in the ChapterCase) leverages network effects for competitive advantage. Netflix's business model is to grow its global user base as large as possible and then to monetize it via monthly subscription fees. It does not offer any ads. The established customer base in the old-line DVD rental business gave Netflix a head start when entering into the new business of online streaming. Moreover, the cost to Netflix of establishing a large library of streaming content is more or less fixed, but the per unit cost falls drastically as more users join. Moreover, the marginal cost of streaming content to additional users is also extremely low (it is not quite zero because Netflix pays for some delivery of content either by establishing servers hosting content in geographic proximity of users, or paying online service providers for faster content streaming).

As Netflix acquires additional streaming content, it increases the value of its subscription service to customers, resulting in more people signing up. With more customers, Netflix could then afford to provide more and higher-quality content, further increasing the value of the subscription to its users. This created a virtuous cycle that increased the value of a Netflix subscription as more subscribers signed up (see Exhibit 7.14).

Growing its user base is critical for Netflix to sustain its competitive advantage. Netflix has been hugely successful in attracting new users: In 2017 it had some 100 million subscribers worldwide. Yet, while providing a large selection of high-quality streaming content is a necessity of the Netflix business model, this element can and has been easily duplicated by others such as Amazon, Hulu, and premium services on Google's YouTube. To lock in its large installed base of users, however, Netflix has begun producing and distributing original content such as the hugely popular shows *House of Cards* and *Orange Is the New Black*. To sustain its competitive advantage going forward, Netflix needs to rely on its core competencies, including its proprietary recommendation

**EXHIBIT 7.14** / Netflix Business Model: Leveraging Network Effects to Drive Demand



engine, data-driven content investments, and network infrastructure management.

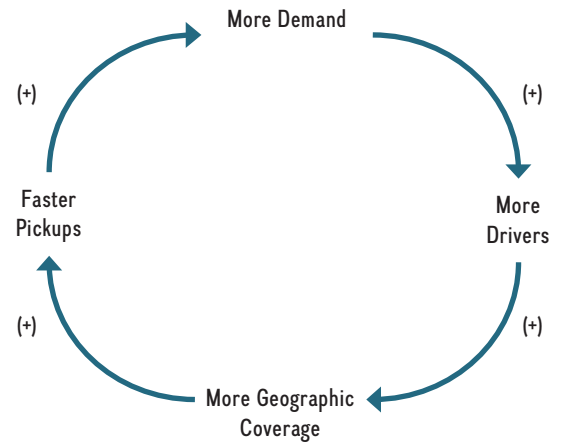
**Uber.** The feedback loop in network effects becomes even more apparent when taking a closer look at Uber's business model. Like many platforms, Uber performs a classic matching service. In this case, it allows riders to find drivers and drivers to find riders. Uber's deep pockets, thanks to successful rounds of fund-raising, allow the startup to lose money on each ride in order to initiate a positive feedback loop. Uber provides incentives for drivers to sign up (such as extending credit so that potential drivers can purchase vehicles) and also charges lower than market rates for its rides. As more and more drivers sign up in each city and thus coverage density rises accordingly, the service becomes more convenient. This drives more demand for its services as more riders choose Uber, which in turn brings in more drivers. This positive feedback loop is shown in Exhibit 7.15.

With more and more drivers on the Uber platform, both wait time for rides as well as driver downtime falls. Less downtime implies that a driver can complete more rides in a given time while making the same amount of money, even if Uber should lower its fares. Lower fares and less wait time, in turn, bring in more riders on the platform, and so on. This additional feedback loop is shown in Exhibit 7.16.

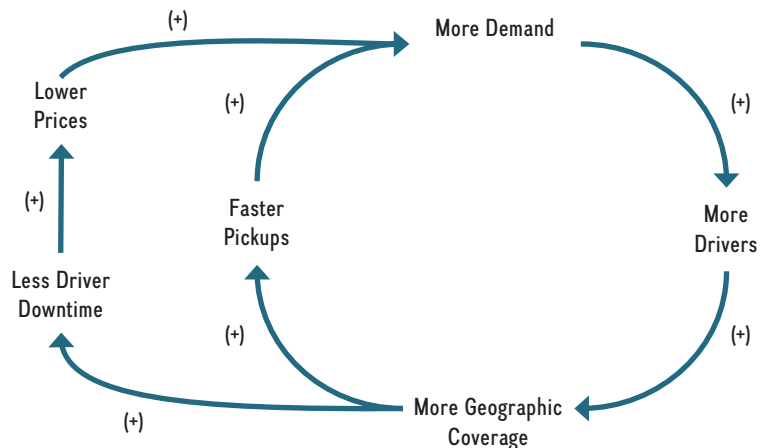
This feedback loop also explains the much hated "surge pricing" that Uber employs. It is based on dynamic pricing for its services depending on demand. For example, during the early hours of each New Year, demand for rides far outstrips supply. To entice more drivers to work during this time, Uber has to pay them more. Higher pay will bring more drivers onto the platform. Some users complain about surge pricing, but it allows Uber to match supply and demand in a dynamic fashion. As surge pricing kicks in, fewer people will demand rides, eventually bringing supply and demand back into an equilibrium (see Exhibit 7.16).

The ability of a platform to evince and manage positive network effects is critical to producing value for each participant, and it allows it to gain and sustain a competitive advantage. In contrast, negative network effects describe the situation where more and more users exit a platform and the value that each remaining user receives from the platform declines. The social network Myspace experienced negative network effects as more and more users abandoned it for Facebook. One reason was that Myspace attempted to maximize ad revenues per user too early in its existence, while Facebook first focused on building a social media platform that allowed for the best possible user experience before starting to monetize its user base through selling ads.

**EXHIBIT 7.15** / Uber's Business Model: Leveraging Network Effects to Increase Demand



**EXHIBIT 7.16** / Uber's Network Effects with Feedback Loop



## 7.6 Implications for Strategic Leaders

Innovation drives the competitive process. An effective innovation strategy is critical in formulating a business strategy that provides the firm with a competitive advantage. Successful innovation affords firms a temporary monopoly, with corresponding monopoly pricing power. *Fast Company* named Amazon, Google, Uber, Apple, and Snap as the top five of its 2017 Most Innovative Companies.<sup>82</sup> Continuous innovation fuels the success of these companies.

Entrepreneurs are the agents that introduce change into the competitive system. They do this not only by figuring out how to use inventions, but also by introducing new products or services, new production processes, and new forms of organization. Entrepreneurs frequently start new ventures, but they may also be found in existing firms.

The industry life cycle model and the crossing-the-chasm framework have critical implications for how you manage innovation. To overcome the chasm, you need to formulate a business strategy guided by the who, what, why, and how questions of competition (Chapter 6) to ensure you meet the distinctly different customer needs inherent along the industry life cycle. You also must be mindful that to do so, you need to bring different competencies and capabilities to bear at different stages of the industry life cycle.

It is also useful to categorize innovations along their degree of newness in terms of *technology* and *markets*. Each diagonal pair—incremental versus radical innovation and architectural versus disruptive innovation—has different strategic implications.

Moving from the traditional pipeline business to a platform business model implies three important shifts in strategy focus:<sup>83</sup>

1. From resource control to resource orchestration.
2. From internal optimization to external interactions.
3. From customer value to ecosystem value.

The focus in platform strategy, therefore, shifts from traditional concepts of resource control, industry structure, and firm strategic position to creating and facilitating more or less frictionless market exchanges.

In conclusion, in this and the previous chapter, we discussed how firms can use *business-level strategy*—differentiation, cost leadership, blue ocean, and innovation—to gain and sustain competitive advantage. We now turn our attention to *corporate-level strategy* to help us understand how executives make decisions about *where to compete* (in terms of products and services offered, integration along the value chain, and geography) and how to execute it through strategic alliances as well as mergers and acquisitions. A thorough understanding of business and corporate strategy is necessary to formulate and sustain a winning strategy.

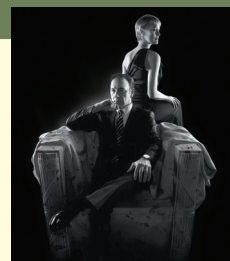
## CHAPTERCASE 7 / Consider This. . .

**THE IMPACT OF NETFLIX'S** mega-success *House of Cards* in reshaping the TV industry cannot be underestimated. The American political TV drama starring Kevin Spacey and Robin Wright was an innovation that fundamentally changed the existing business model of TV viewing on three fronts.

1. **Delivery.** *House of Cards* was the first time that a major original TV drama was streamed online and thus

bypassed the established ecosystem of networks and cable operators.

2. **Access.** *House of Cards* created the phenomenon of binge watching because it allowed Netflix subscribers



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Photofest

to view many or all episodes in one sitting, without any advertising interruptions. As of 2017, spending an estimated \$200 million, Netflix produced five seasons for a total of 65 episodes each roughly 45 to 60 minutes long.

3. Management. *House of Cards* was the first time original programming had been developed based on Netflix's proprietary data algorithms and not by more traditional methods. When executive producer David Fincher and actor Kevin Spacey brought the proposed show to Netflix, the company approved the project without a pilot or any test-marketing. "Netflix was the only network that said, 'We believe in you,'" recalls Spacey. "'We've run our data and it tells us that our audience would watch this series. We don't need you to do a pilot. How many [episodes] do you wanna do?'"<sup>84</sup>

The success of *House of Cards* created a huge buzz, attracted millions of new subscribers to Netflix, and helped its stock climb to new highs.

Despite riding high, there are some serious challenges for CEO Reed Hastings and Netflix on the horizon. First is the issue of how to ensure that Netflix users have a seamless, uninterrupted viewing experience, without buffering (and seeing the "spinning wheels"). Recall that Netflix is responsible for more than one-third of all downstream internet traffic in the United States during peak hours. For a long time, Netflix has been a strong supporter of *net neutrality*, with the goal of preventing internet service providers (ISPs) such as Comcast from slowing content or blocking access to certain websites. Conceivably, Comcast may have an incentive to slow Netflix's content and favor its own NBC content.

To work around the net neutrality rules, ISPs have begun imposing "data caps" on their customers. Once users exceed their data cap, additional data usage incurs added fees. Another ISP practice that concerns Hastings is "zero-rating," an arrangement where the ISP does not count traffic from preferred data providers such as their own content toward customers' data caps. These are the reasons Netflix—after refusing to do so for a long time—has begun to pay ISPs directly to ensure a smoother streaming experience for its users. Rather than going through the public internet, in exchange for payment, Netflix is able to hook its servers directly to Comcast's broadband network. Given its precedent, Netflix is likely to strike similar deals with other ISPs, such as AT&T and Verizon, that control access to Netflix customers.

The second issue for Hastings is how to create sustained future growth. The domestic market seems to be maturing, so growth has to come from international expansion. Some

49 million (or about half of) Netflix subscribers reside outside the United States. To drive future growth, Netflix is rapidly expanding its services internationally from 60 countries in 2016 to 190 countries. Netflix is still noticeably absent from China, a market where Hastings commented that Netflix is still, "in the relationship building phase."<sup>85</sup> One of the issues Netflix will face is potential censoring of its content; *House of Cards* has not only explicit content in terms of nudity and violence, but also features a corrupt Chinese businessman meddling in U.S. politics. Moreover, problems with a lack of available titles and few places with broadband internet connections hamper Netflix's international growth.

## Questions

1. Netflix started to pay ISPs to ensure fast and seamless access to its end users.
  - a. Does this violate *net neutrality* (the rule that internet service providers should treat all data equally, and not charge differentially by user, content, site, etc.)? Why or why not?
  - b. Do you favor net neutrality? Explain why or why not?
  - c. How do ISPs use "zero-rating" of data to circumvent net neutrality rules? Is this legal? Is this ethical? Explain.
  - d. As ISPs will extract more fees from Netflix, the company continues to invest heavily in its proprietary "Open Connect" network, which allows Netflix to connect its servers directly to those of ISPs (via *peering*). Since most users upgrade their internet connections to faster broadband in order to watch video, are the incentives of broadband providers aligned with Netflix, or will the broadband providers continue to extract significant value from this industry? Apply a five forces analysis.
2. Netflix growth in the United States seems to be maturing. What other services can Netflix offer that might increase demand in the United States?
3. International expansion appears to be a major growth opportunity for Netflix. Elaborate on the challenges Netflix faces going beyond the U.S. market.
  - a. Do you think it is a good idea to rapidly expand to 190 countries in one fell swoop, or should Netflix follow a more gradual international expansion?
  - b. What are some of the challenges Netflix is likely to encounter internationally? What can Netflix do to address these? Explain.



## TAKE-AWAY CONCEPTS

This chapter discussed various aspects of innovation and entrepreneurship as a business-level strategy, as summarized by the following learning objectives and related take-away concepts.

### LO 7-1 / Outline the four-step innovation process from idea to imitation.

- Innovation describes the discovery and development of new knowledge in a four-step process captured in the four I's: *idea*, *invention*, *innovation*, and *imitation*.
- The innovation process begins with an idea.
- An invention describes the transformation of an idea into a new product or process, or the modification and recombination of existing ones.
- Innovation concerns the commercialization of an invention by entrepreneurs (within existing companies or new ventures).
- If an innovation is successful in the marketplace, competitors will attempt to imitate it.

### LO 7-2 / Apply strategic management concepts to entrepreneurship and innovation.

- Entrepreneurship describes the process by which change agents undertake economic risk to innovate—to create new products, processes, and sometimes new organizations.
- Strategic entrepreneurship describes the pursuit of innovation using tools and concepts from strategic management.
- Social entrepreneurship describes the pursuit of social goals by using entrepreneurship. Social entrepreneurs use a triple-bottom-line approach to assess performance.

### LO 7-3 / Describe the competitive implications of different stages in the industry life cycle.

- Innovations frequently lead to the birth of new industries.
- Industries generally follow a predictable industry life cycle, with five distinct stages: introduction, growth, shakeout, maturity, and decline.
- Exhibit 7.10 details features and strategic implications of the industry life cycle

### LO 7-4 / Derive strategic implications of the crossing-the-chasm framework.

- The core argument of the crossing-the-chasm framework is that each stage of the industry life cycle is dominated by a different customer group, which responds differently to a new technological innovation.
- There exists a significant difference between the customer groups that enter early during the introductory stage of the industry life cycle and customers that enter later during the growth stage.
- This distinct difference between customer groups leads to a big gulf or chasm, which companies and their innovations frequently fall into.
- To overcome the chasm, managers need to formulate a business strategy guided by the who, what, why, and how questions of competition.

### LO 7-5 / Categorize different types of innovations in the markets-and-technology framework.

- Four types of innovation emerge when applying the existing versus new dimensions of technology and markets: incremental, radical, architectural, and disruptive innovations (see Exhibit 7.11).
- An incremental innovation squarely builds on an established knowledge base and steadily improves an existing product or service offering (existing market/existing technology).
- A radical innovation draws on novel methods or materials and is derived either from an entirely different knowledge base or from the recombination of the existing knowledge base with a new stream of knowledge (new market/new technology).
- An architectural innovation is an embodied new product in which known components, based on existing technologies, are reconfigured in a novel way to attack new markets (new market/existing technology).
- A disruptive innovation is an innovation that leverages new technologies to attack existing markets from the bottom up (existing market/new technology).

**LO 7-6 / Explain why and how platform businesses can outperform pipeline businesses.**

- Platform businesses scale more efficiently than pipeline businesses by eliminating gatekeepers and leveraging digital technology. Pipeline businesses rely on gatekeepers to manage the flow of value from end to end of the pipeline. Platform businesses leverage technology to provide real-time feedback.
- Platforms unlock new sources of value creation and supply. Thus they escape the limits faced by a pipeline company working within an existing industry based on physical assets.
- Platforms benefit from community feedback. Feedback loops from consumers back to the producers allow platforms to fine-tune their offerings and to benefit from big data analytics.

**KEY TERMS**

Architectural innovation (p. 245)	Innovation (p. 223)	Process innovation (p. 231)
Crossing-the-chasm framework (p. 235)	Innovation ecosystem (p. 245)	Product innovation (p. 231)
Disruptive innovation (p. 245)	Invention (p. 222)	Radical innovation (p. 243)
Entrepreneurs (p. 226)	Markets-and-technology framework (p. 243)	Reverse innovation (p. 248)
Entrepreneurship (p. 225)	Network effects (p. 229)	Social entrepreneurship (p. 226)
First-mover advantages (p. 224)	Patent (p. 223)	Standard (p. 230)
Incremental innovation (p. 243)	Platform business (p. 249)	Strategic entrepreneurship (p. 226)
Industry life cycle (p. 227)	Platform ecosystem (p. 250)	Trade secret (p. 223)
		Winner-take-all markets (p. 244)

**DISCUSSION QUESTIONS**

1. Patents are discussed as part of the invention phase of the innovation process in Exhibit 7.2. Describe the trade-offs that are made when a firm decides to patent its business processes or software. Is this same trade-off applicable to tangible hardware products made by a firm?
2. Select an industry and consider how the industry life cycle has affected business strategy for the firms in that industry over time. Detail your answer based on each stage: introduction, growth, shakeout, maturity, and decline.
3. Describe a firm you think has been highly innovative. Which of the four types of innovation—radical, incremental, disruptive, or architectural—did it use? Did the firm use different types over time?
4. The chapter discussed the internet as a disruptive innovation that has facilitated online retailing. It also has presented challenges to brick-and-mortar retailers. How might retailers such as Nordstrom, Neiman Marcus, or Macy's need to change their in-store experience to continue to attract a flow of customers into their stores to expand sales using direct selling and store displays of the actual merchandise? If the internet continues to grow and sales of brick-and-mortar retailers decline, how might the retailers attract, train, and retain high-quality employees if the industry is perceived as in decline?

## ETHICAL/SOCIAL ISSUES

1. You are a co-founder of a start-up firm making electronic sensors. After a year of sales, your business is not growing rapidly, but you have some steady customers keeping the business afloat. A major supplier has informed you it can no longer supply your firm because it is moving to serve large customers only, and your volume does not qualify. Though you have no current orders to support an increased commitment to this supplier, you do have a new version of your sensor coming out that you hope will increase the purchase volume by over 75 percent and qualify you for continued supply. This supplier is important to your plans. What do you do?
2. GE's development of the Vscan provides many benefits as a lower-cost and portable ultrasound device (see Strategy Highlight 7.2). Cardiologists, obstetricians, and veterinarians will be able to use the device in rural areas and developing countries. One of the criticisms of the device, however, is that it also facilitates the use of the technology for

gender-selective abortion. In India, for example, there is a cultural preference for males, and the Vscan has been used to identify gender in order to abort an unwanted female fetus. Some argue that gender selection is also used for economic reasons—specifically, to alleviate the financial strain of the common dowry practice. A daughter would require the family to pay a dowry of cash and gifts to the bridegroom's family in order to arrange a suitable marriage, while a son would bring in a dowry of cash, jewelry, gifts, and household items to help the couple start their home.<sup>86</sup>

To what extent is GE ethically responsible for how—and why—the Vscan is used? (To what extent is any company ethically responsible for how—and why—its product is used?) Note that GE's website states that it is an "Agent of Good." Consider ways that GE might become involved in communities in India to show the company's concern for the underlying problems by improving conditions for women. What other ways might GE influence how its equipment is used?

## SMALL GROUP EXERCISES

### //// Small Group Exercise 1

Your group works for Warner Music Group ([www.wmg.com](http://www.wmg.com)), a large music record label whose sales are declining largely due to digital piracy and online sales overall. Your supervisor assigns you the task of developing a strategy for improving this situation.

1. What are the key issues you must grapple with to improve the position of Warner Music Group (WMG)?
2. In what phase of the life cycle is the record-label industry?
3. How does this life cycle phase affect the types of innovation that should be considered to help WMG be successful?

### //// Small Group Exercise 2

The text discusses the pros and cons of pipeline businesses and platform businesses. Several examples

of new platform businesses are mentioned (Uber, Airbnb, Facebook, and Alibaba, for example). Yet it is noted that these multi-sided markets have actually been around much longer.

1. What are some of the biggest differences in the historical way to view platform markets and the more modern business incarnation?
2. In your group, discuss a company that could be moving toward a platform business or a new firm that is developing as a platform. Sketch out a business model for this firm and the network loop it could be utilizing to drive demand.
3. Can you identify a pipeline business that is likely to be disrupted by the firm you discussed in question 2 above? What could this pipeline business do to improve its long-term viability?

## mySTRATEGY

## Do You Want to Be an Entrepreneur?

**R**ecent years have seen a sometimes public debate around the question of whether entrepreneurs are better off skipping college. For reasons noted below, we think this is a false debate, and we'll explain why. But before we're done, we will identify an unexpected way in which a higher education can legitimately be seen as limiting one's ability to innovate and start a new business.<sup>87</sup>

Let's start by acknowledging there are complex links between education and entrepreneurship and by explicitly stating our point of view: The right person can become an entrepreneur without the benefit of a college degree. But having a college degree is no impediment to becoming an entrepreneur and can further provide the benefit of formally studying the dynamics of business—just as we are doing in this class.

One volley in the debate was a provocative article in *Forbes*, titled “The Secret to Entrepreneurial Success: Forget College.” Another article listed 100 impressive entrepreneurs, none with a college degree and some with only an elementary school education. And while some famous entrepreneurs neglected higher education (Mark Zuckerberg dropped out of Harvard; Steve Jobs dropped out of Reed College), entrepreneurs are more likely to be better educated than most business owners. Just over half of business owners have a college degree.

And while the very different entrepreneurs in this chapter were chosen for their business success and innovations, and not their education, they—Jeff Bezos, Sara Blakely, Reed Hastings, Elon Musk, and Jimmy Wales—all have college degrees.

On the student side, business majors are drawn to the entrepreneurial role. Over the past 20 years, there has been an explosion of entrepreneurial programs at business schools, all in response to demand. Some 50 to 75 percent of MBA students from the leading programs are becoming entrepreneurs within 15 years of graduation.

But there is a more likely way in which higher education could be the enemy of entrepreneurship: the impact of large student loans. According to a new report, the higher the student loan debt in an area, the lower the net creation of very small businesses. The correlation of those two factors comes with some caveats:

- These effects tend to affect only the smallest businesses, which are more likely to take on debt that's secured by the founder's own personal credit.
  - The authors of the report stop short of claiming that heavy debt burdens hamper an individual's attempt.
  - An alternate view of the data would be that students with high debt load go directly to higher paying corporate jobs.
1. Thinking about today's business climate, would you say that now is a good time to start a business? Why or why not?
  2. Do you see higher education as a benefit or detriment to becoming a successful entrepreneur? Why or why not?
  3. Identify both the up and down sides of taking on personal debt to finance a higher education.
  4. Explain how you would apply the strategic management framework to enhance your startup's chances to gain and sustain a competitive advantage.

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