
Fundamentals of Business and Economics

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c0001 Fundamentals of Business

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After studying this chapter, students should be able to:

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- Understand the logic and mechanics of a business enterprise

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- Appreciate the role of value in business and economics

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- Identify roles and responsibilities of business in society

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- Explain business as a human activity

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- Evaluate elements of a going concern versus a failed venture

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- Identify factors essential to a dynamic venture

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TECH VENTURE INSIGHT

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It's Hard to Be a CEO

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Mark Zuckerberg is the 23-year-old chief executive of Facebook, the popular social-networking web site used by millions of people around the world. Zuckerberg founded Facebook as a 19-year-old college student in 2004. The company enjoyed almost instant success as millions of users flocked to the site, and Silicon Valley venture capital firms competed with each other to provide funding. In 2007, Microsoft invested \$240 million in the venture at a valuation of \$15 billion.

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Zuckerberg moved Facebook's headquarters to Palo Alto, California, shortly after he launched the company. At first, Zuckerberg was able to maintain a "college student" lifestyle, living and working out of a rented house with the other Facebook engineers. When he finally moved into a Silicon Valley office, Zuckerberg would arrive mid-morning in his flip-flops and work late into the night. It was a laid-back style that was not suited to the growing business.

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To adjust to the challenges of running a fast-growing technology company, Zuckerberg turned to other industry giants for consultation. He became friends with Marc Andreessen who founded the Internet browser company Netscape when he was just 22 years old. The two of them met often to discuss business and strategy issues. Zuckerberg also had frequent conversations with Silicon Valley investor Roger McNamee. McNamee had become a mentor to his young protégé. Zuckerberg lamented that being CEO of his own company “is hard—I do sometimes whine to Roger about it.”

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In March 2008, Zuckerberg finally reached into the Internet company talent pool and hired 38-year-old Sheryl Sandberg from Google to become Facebook’s CEO. Sandberg was one of the first 300 employees at Google, and helped turn the company into a global advertising power. Together, the two confronted the business challenges that the youthful Zuckerberg may not have had the knowledge or experience to tackle on his own.

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Source: Adapted from Vara V, Facebook CEO seeks help as site grows up, The Wall Street Journal, March 5, 2008, A1; Kafka P, Facebook’s new grownup: Google Exec Sheryl Sandberg, Silicon Valley Insider, March 4, 2008.

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INTRODUCTION

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Mark Zuckerberg is the youthful CEO of the popular social-networking web site, Facebook. As his company grew rapidly, Zuckerberg discovered that his background and skills were increasingly inadequate to the business challenges he faced. Confounded not only by the technical issues that inevitably arise in a rapidly growing venture, he also encountered increasingly complex business and strategic issues. As the opening Technology Venture Insight highlights, after four years of operation, Zuckerberg finally hired a more seasoned and business-savvy executive to help him achieve his business goals.

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This is a common path for many technology entrepreneurs. While they are experts in a narrow technology field, they often find their business skills less than adequate to cope with a growing number of employees and the pressures of global competition. This textbook starts with the premise that many technology-oriented students simply are not exposed to the fundamental principles of business operations. To address this problem, we have devoted the first three chapters of this textbook to business and economics topics to familiarize technology students with basic business concepts, as well as the challenges faced by technology ventures in the modern global economy.

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Business activity pervades societies and cultures around the globe. The nomadic reindeer herder on the steppes of Mongolia delivers hides to a market in the capital city of Ulan Bator to supplement a family income. The fashion designer

in Hong Kong sends out the latest designs to an eager audience in New York. And the dairy farmer in Wisconsin has lunch while listening to up-to-the-minute broadcasts on the price of feed grains and other commodities. Business is all-encompassing and globally connected, yet usually only modestly understood by most people.

p0160 In modern times, the pervasive influence of business plays out in entire television networks, such as CNBC, which broadcasts every tick of the major stock markets as they make their daily up and down movements. Newspapers, such as *The Wall Street Journal*, *Financial Times*, and *Investor's Business Daily*, are dedicated entirely to business and economic news. Blogs, such as TechCrunch and Killer Startups, report continuously about new technology ventures being launched, acquired, going public, or closing their doors for the last time.

p0170 Despite this increased awareness of business activity, most technology-focused education and training programs do not include lessons on fundamental business principles and practice. Technology students, however, are exposed to compulsory instruction in literature, history, composition, and other of liberal arts subjects, but few are required to enroll in basic business courses. This is a pity since most technology-oriented students will typically end up working *in* a business. In fact, a recent review of the Standard & Poor's 500 largest companies in the United States revealed that fully 23% are led by individuals with an undergraduate engineering degree. The next closest undergraduate major is business, with a 15% representation.¹

p0180 Of course, it is possible to learn some basic principles of business and management by working within a company and observing how it operates and is managed by others.² Unfortunately, this approach has two critical drawbacks. First, it takes a long time to both *perform* in your technical job and at the same time *observe* enough business situations, decisions, and consequences so that you may extract meaningful lessons. Second, those who manage and lead the business may not be doing a very good job—and the lessons learned may not be helpful in your career. If your workplace is managed by individuals who have minimal formal management or leadership training, they may be less effective than they could be. Thus, limiting your learning of business and management to observation alone may, in the end, only serve to suboptimize *your* effectiveness.

p0190 The focus of this book is on technology ventures—how they start, operate, and sometimes exit profitably. To understand technology ventures (or any other type of venture), it is critical that you understand fundamental business concepts. Fortunately, you don't necessarily need to enroll in a formal business degree program to learn important basic principles. In fact, a limited number of fundamental business concepts can be learned and absorbed relatively quickly, giving you a leg up on the next step toward higher levels of mastery. It is our hope that you will continue your learning beyond the basics described here, by reading business publications, watching business programming on television, and thinking about the business issues that are described in those media.

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TECH MICRO-CASE 1.1**Mastering the Fundamentals**

Consider the example of a professional golfer like Tiger Woods. Mr. Woods would not be the extraordinary golfer he is today without having previously struggled with and mastered the fundamentals of golf. In his case, that means he had to learn the mechanics of the golf swing, the placement of the hands on the golf club shaft, the focusing of the mind before each shot, and myriad other details. As these *fundamentals* became *habits* through *practice*, Mr. Woods was able to take them for granted and shift his attention to other factors of the game. Having mastered the fundamentals, he is, for example, now able to experiment with hand placement on golf shots that present unusual challenges, such as those out of rough grass, behind a hazard, or those that require a certain type of spin to be placed on the ball. Experiments such as these can only take place *after* the fundamentals have been mastered. Tiger Woods is a multi-millionaire, with many opportunities in his life. Without his world-leading mastery of the fundamentals of golf, none of those other things would be options for Mr. Woods.³

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Section 1.1 is intended to guide you, the technology-oriented student, through what we have determined to be the fundamentals of business. If you have already taken basic business courses, undoubtedly you will find some familiar material here. In that case, use the chapter as a *reminder* of the fundamentals, in the same way star athletes need to be reminded from time to time to “go back to the fundamentals.” If you are being exposed to these concepts for the first time, your goal will be to learn and then practice the fundamentals until they become habits.

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The first chapter aims to *initiate a personal interest* in the business side of the technical field that you have been studying. Whether you are an engineer, scientist, or studying other technical disciplines, there is a business aspect that generates the capital to pay for lab equipment, computers, salaries, etc. Getting to know this side of your technical field of study will enable you to become more valuable to your employers, and it will prepare you someday to make the entrepreneurial leap into your own technology venture.⁴ In this chapter, we will examine business from various perspectives: logical, ethical, and societal. These perspectives overlap in a number of ways, but together form a fundamental understanding that can be applied to nearly any type of technology venture that you may dream up. Let’s begin by examining the basic question: What is a business?

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60230**1.1 WHAT IS A BUSINESS?**

The term “business” generates different reactions among different people. Some of the leading practitioners of business and venture creation regard business as “fun,” “exciting,” and even “playful.”⁵ They are successful in part because business is a passion for

them, and they don't make a distinction between their "work" and their "play." To others, business is an activity that they would prefer to avoid—and some, such as the founders of socialist economics, even regard business and businesspeople as a temporary stage in the development of economies. Although not as prevalent as they were a few decades ago, communist and socialist countries and economies tended to view business leaders and businesspeople as a passing stage in the history of cultural and social development (for more on this perspective, see, for example, Ref.⁶).

Business, in fact, has become a global phenomenon over the past decade, and modern national and international policies promote the flow of goods, services, and capital with relative freedom around the world.⁷ Today, even the formerly communist countries, such as Russia and China, have adopted decidedly pro-business policies. In other words, business is global in scope and is here to stay. As such, it is useful to begin with a definition. Webster's dictionary defines business as "a usually commercial or mercantile activity engaged in as a means of livelihood." For our purposes, a business is defined as:

An organized and purposeful human activity designed to create value for others and to exchange that value for something else of equal or greater value (usually, money), and that is intended to continue to provide such value over time as a going concern.

1.1.1 Business as an Organized Activity

Notice that we define business as an **organized activity**, where an individual or a group combine and deploy resources, such as land, labor, and capital, to use toward a productive activity. It is often easy to overlook the importance of the ability to organize and deploy resources for economic or social gains. After all, we are all born into a world of large organizations—schools, automobile manufacturers, banks, grocery stores, and many others. These large organizations may appear as if they have always existed to serve the purposes that they do. Remarkably, nearly every single one of the large organizations that provide basic personal belongings and needs did not exist a mere 150 years ago. They all were founded by an individual entrepreneur or a group of partners who gathered the necessary resources and launched a venture. Ford Motor Company was launched by Henry Ford in 1901.⁸ The H.J. Heinz Company was launched in 1869 by Mr. Henry Heinz when he was 25 years old.⁹ General Electric was established by Thomas Edison and others in 1892.¹⁰ And the list goes on. Remember, every large organization that today provides you with the staples and fashionable items that you need and want was, at one point in time, a brand-new venture with only limited prospects for success.

1.1.2 Business as a Purposeful Activity

We also define business as a **purposeful** activity, which implies that businesses are founded on the belief that an innovation can be converted to value that is wanted

or needed by a market or markets. The innovations that underlie a new business idea can be widely varied. Some innovations are centered on new products, or extensions of existing products. Take, for instance, the original Apple computer introduced by Steve Jobs and Steve Wozniak to the U.S. market in March 1977. That product was truly revolutionary, and was the first to make the power of the computer available to the average American.¹¹ Its graphical user interface (GUI) was just one of many features that differentiated the Apple computer from all other efforts, putting computing power into the hands of millions of average users. Since then, the company and its computers have undergone myriad transformations, each of which was an extension of the original founding act and product. Jobs and Wozniak launched Apple in 1976. Today, Apple, Inc. is a global enterprise that continues to build value according to the purposes on which the company was founded more than 30 years ago.¹¹

1.1.3 Business as a “Going Concern”

A third aspect of our definition of business is that it is a **going concern**, distinct from a project or hobby. A going concern means that the business will continue into the indefinite future, with no clear end date or precise definition of “success.” A business is usually said to be successful if it continues to make profits over time—usually increasing profits relative to industry averages. The manner in which a business makes profit is deemed its **business model**. Business models vary across and within industries. This concept will appear again and again throughout the textbook. For now, it is sufficient to know that we define the term “business model” as the way the business makes money.

In contrast, consider short-term projects undertaken by Boy Scout or Girl Scout troops to raise funds. The cookie sale, chili cook-off, or hot dog stand organized by these groups have some of the characteristics of a business, where an aggregation and deployment of resources are required, along with adding value to those resources in a manner that other people are willing to pay *in excess* of the costs. However, several elements are missing here that sets these undertakings apart from our definition of business. Namely, these activities are not intended to continue indefinitely, and they have a limited duration based on a date or fundraising goal. In other words, there is no intent on the part of the organizers to establish a going concern. A business, on the other hand, intends to make profits from the application of its resources in the short term (quarterly), and over time (annually, and year over year). Intending to establish a going concern means that business founders are interested in establishing a **system**, whereby the venture’s resources are organized to continue to create valuable output that produces profits into the indefinite future.

1.1.4 Value

The final term to recognize in our definition of business is **value**. Our definition has only a single, very specific meaning. In the context of business, value is defined by

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the market.¹² That's it. If the market says something is valuable, there is no need for further examination. This straightforward, market-focused definition of the term "value" is occasionally disconcerting to technically oriented people. They have been trained to associate value with highly precise experimental designs, or with exquisitely crafted algorithms, or with unique solutions to complex problems. In the domain of engineering and the sciences, these concepts represent valuable contributions to research and practice. In the domain of business, however, the "best" product or service does not always have the most value to a market. A good way to understand "value" from the perspective of a market is through this simple equation:

$$\text{Value} = \text{Price} \times \text{Quality}$$

p0300 This equation expresses the concept that most markets recognize a trade-off between price and quality, i.e., higher-priced goods usually have higher quality, while lower-priced goods have lower quality. Some markets will trade higher quality for a lower price simply because there is scant demand for higher quality or there is no interest in paying more for higher quality. In contrast, other markets are interested in higher quality and do not mind paying a higher price to obtain it. Take automobile purchases, for instance, that are available in a wide price range and across different quality levels. The individual seeking to purchase a Hyundai Elantra will not likely be tempted by the Cadillac dealer across the street, and vice versa.

p0310 Now that we have explored the definition of *what* a business is, let us turn our attention to *how* a business converts disorganized resources into value for a market.

s0090 1.2 VALUE AND THE MARKET

n0320 Markets are comprised of people, who have the freedom to make choices about how they spend their time, money, and energy. Collectively, these individual free choices comprise a market. Building a business means developing a mechanism for consistently and continuously providing value to a market. Of course, that means the business must tune into the choices the market is making, and will make in the future. Many businesses find early success with products or services that appeal to a certain market, only to find that over time the market changes and the formerly popular offerings are no longer in demand.¹³ Hence, it is very important for a business to understand that markets shift their definition of value over time, and in the context of competitor products.

s0100 1.2.1 Value Creation

p0330 There are probably as many ways to create value as there are people on this planet. Consider the Turkish fisherman who sets out each morning into the Black Sea to catch bass. He brings the fish he catches back to the open air market near the boat docks where housewives, professionals, and others eagerly scan the day's catch for

a tasty dinner meal. The shoppers on the dock constitute the “market” for Black Sea bass. The individuals constituting that market find value in the fisherman’s ability to catch the bass to the extent that they do not want to go out and catch their own. The market will also be interested in whether the bass provided by the fisherman are of adequate quality. Prices for the bass will reflect the quality of the catch and the extent to which the market has other Black Sea bass or substitute product choices.

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For his part, the fisherman has a going concern business venture that consists of setting out daily to bring fish back to his market. His resources are his boat and fishing gear, fishing know-how, and retail market space. On their own, none of these resources would provide the market with the bass that it needs. It is the entrepreneurial activity of the fisherman to organize and deploy these resources that leads to the creation of value for the bass-eating market.

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Let’s take the example of value creation to another domain. Consider the case of Chad Hurley, Steve Chen, and Jawed Karim, three entrepreneurs who set out to create a new type of Internet company in Menlo Park, California, which is located in the heart of Silicon Valley and is the birthplace of some of the most rapidly growing technology companies in history. These three individuals were veterans of technology companies, having been principals in the online payment service known as PayPal. From their garage in Menlo Park in December 2005, they went on to create one of the fastest growing companies of all time. They did this by aggregating the resources centered on the Internet and by employing creativity, leading to the creation of YouTube.

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By July 2006, YouTube reported more than 100 million videos being viewed every day from its site, with as many as 50,000 videos added each day. The brilliant aspect of this concept is that most of the resources that form the “product” of YouTube are provided by people who have no ownership or other interest in the venture. YouTube is part of the popular Web 2.0 revolution that began with companies such as FaceBook and MySpace. Each of these web sites, as well as many others, gather resources from users themselves in order to build a community of users. Once a community is built, the entrepreneurs then determine how to develop a profitable business model. Some Web 2.0 sites sell advertising to those companies that want to reach the community of users. In the case of YouTube, advertising is the main source of revenue. In October 2006, a mere 18 months after its establishment, YouTube was acquired by Google for \$1.65 billion.¹⁴

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As these stories illustrate, the resources required to launch a venture can vary greatly, and they can be obtained from a wide range of sources. The Turkish fisherman required tools, physical labor, and a retail space to operate his venture. The YouTube founders required capital, computing power, and brain power to operate their venture. The fundamental thread that ties the two vastly different companies together is their focus on serving a market need. In the case of the fisherman, the need is obvious: people need food to eat. In the case of YouTube, the need is less obvious. Do people really need to watch thousands of videos each day? Probably not, but the value created by YouTube (\$1.65 billion in 18 months) far exceeds what the individual fisherman can ever hope to achieve.

s0110 1.2.2 Value Protection

p0380 Technologists create value for markets in multiple ways. Computer scientists invent new software programs that enable greater communication and efficiency. Geneticists invent new forms of living matter that ensure a growing and hungry world population has the food it needs. Engineers solve problems, build roads and bridges, and cure our ailing environment. Each of these types of ventures develops intellectual property. Understanding how to protect the intellectual property that one creates, or that is created by the venture, is an important part of success in technology entrepreneurship. Intellectual property can be nearly anything that an individual or group of individuals in a venture produce or enact. That is, it includes both the products and processes of the venture.

s0120 1.2.3 Value Capture

p0390 Value capture refers to the process of exiting a venture via a sale, merger, or public stock offering. There are a number of events that precede a successful exit from a venture. Along the way, the technology entrepreneur must distribute equity, raise capital, and incentivize employees and others to contribute their talents and energies to ensure that the venture grows. Technology entrepreneurs at the center of this all need to structure the growth of their enterprise to help it prosper, and at the same time they must maintain enough personal ownership in order to stay motivated. If sufficient equity is retained through the fundraising and distribution to others, the technology entrepreneur, upon exit, will capture the value that has been created in the venture.

s0130 1.2.4 Value Proposition

p0400 “Value” has myriad definitions, and entrepreneurs can develop successful ventures with widely different **value propositions**. A value proposition is the story that a venture tells its market about what it intends to provide. For example, YouTube’s value proposition is: “Broadcast yourself”—a simple statement, while not necessarily appealing to everyone, is the foundation of the online video-sharing rage. Similarly, the value proposition for the fisherman might be something like: “The freshest Black Sea bass.”

p0410 Value propositions are important for a venture because they not only communicate what the venture intends to provide, but also help guide the decision-making process. For example, the value proposition for well-known consumer products company Procter & Gamble (P&G) is “Touching lives, improving life.”¹⁵ This value proposition functions as a goalpost for P&G scientists and product developers on how to structure their research and development resources and investment. P&G introduces hundreds of new products to markets around the world each year. The firm’s value proposition guides decision making so that consumers do not get confused about the firm’s intent and offerings.¹⁶

p0420 New technology ventures also benefit from having a well-articulated value proposition to help steer them through the various stages of venture development. Dell Computer, for example, had a potent value proposition when it was founded in 1984 by Michael Dell, a college student at the University of Texas. Mr. Dell established his company on the belief that, by selling personal computer systems directly to customers, he could better understand customers' needs and provide the most effective computing solutions to meet those needs. Dell Computer built on this vision over the years, and is now among the 500 largest companies in the United States, employing more than 70,000 people worldwide.¹⁷

s0140 p0430 1.3 BUSINESS AND SOCIETY

The role of business in society has been the subject of debate and discussion for centuries. As far back as the Roman Empire, politicians, business entrepreneurs, and common folk debated the role of business in creating wealth and prosperity.¹⁸ More recent history has seen this debate crystallize around two dominant modes of thought: capitalism and socialism.

p0440 Capitalism forms the economic bedrock of the Western world, including the United States, the European Union, and Australia, as well as much of Southeast Asia. The principles of capitalism uphold freedom and individual choice as the drivers of prosperity. Business is seen as a noble undertaking where humans freely enter into exchange relationships to maximize their individual and, as a result, their collective prosperity.¹⁹

p0450 Socialism, on the other hand, is the primary alternative to capitalism, and predominates in countries such as China, Russia, and much of Latin America. Of course, there are a number of variants of socialism. The most extreme form is communism. China and North Korea, for example, are two of the few remaining communist economies, although China has been moving further and further from the traditional communist approach. Communism was a major force in the twentieth century and was based on the maxim coined by Karl Marx: "From each according to his ability, to each according to his need." In short, a socialist economy presupposes that centralized planning of business activity can lead to the most equitable distribution of goods and services. Under communism, the individual subordinates himself to the needs of the State. In its extreme form, that meant individuals would be told where to work, how long to work, and how much to produce.²⁰

p0460 Under more moderate forms of socialism, however, individuals have greater freedoms to choose their professions and even to start companies. The State is involved in coordinating business activity and the distribution of wealth. Socialist economies, as opposed to communist ones, use indirect measures to influence business activity, including taxation, special incentives, and welfare programs. Socialist countries like Sweden, for example, have comparatively high corporate tax rates. Businesses pay high taxes to the government, which then uses this money to provide free college

1. Hong Kong	34. Norway	67. Colombia	101. Brazil	133. Ukraine
2. Singapore	35. Slovak Republic	68. Romania	102. Algeria	134. Russia
3. Ireland	36. Botswana	69. Fiji	103. Burkina Faso	135. Vietnam
4. Australia	37. Czech Republic	70. Kyrgyz Republic	104. Mali	136. Guyana
5. United States	38. Latvia	71. Macedonia	105. Nigeria	137. Laos
6. New Zealand	39. Kuwait	72. Namibia	106. Ecuador	138. Haiti
7. Canada	40. Uruguay	73. Lebanon	107. Azerbaijan	139. Sierra Leone
8. Chile	41. South Korea	74. Turkey	108. Argentina	140. Togo
9. Switzerland	42. Oman	75. Slovenia	109. Mauritania	141. Central African Republic
10. United Kingdom	43. Hungary	76. Kazakhstan	110. Benin	
11. Denmark	44. Mexico	77. Paraguay	111. Ivory Coast	142. Chad
12. Estonia	45. Jamaica	78. Guatemala	112. Nepal	143. Angola
13. The Netherlands	46. Israel	79. Honduras	113. Croatia	144. Syria
14. Iceland	47. Malta	80. Greece	114. Tajikistan	145. Burundi
15. Luxembourg	48. France	81. Nicaragua	115. India	146. Rep. of Congo
16. Finland	49. Costa Rica	82. Kenya	116. Rwanda	147. Guinea Bissau
17. Japan	50. Panama	83. Poland	117. Cameroon	148. Venezuela
18. Mauritius	51. Malaysia	84. Tunisia	118. Suriname	149. Bangladesh
19. Bahrain	52. Uganda	85. Egypt	119. Indonesia	150. Belarus
20. Belgium	53. Portugal	86. Swaziland	120. Malawi	151. Iran
21. Barbados	54. Thailand	87. Dominican Rep.	121. Bosnia and Herzegovina	152. Turkmenistan
22. Cyprus	55. Peru	88. Cape Verde		153. Burma
23. Germany	56. Albania	89. Moldova	122. Gabon	154. Libya
24. The Bahamas	57. South Africa	90. Sri Lanka	123. Bolivia	155. Zimbabwe
25. Taiwan	58. Jordan	91. Senegal	124. Ethiopia	156. Cuba
26. Lithuania	59. Bulgaria	92. The Philippines	125. Yemen	157. North Korea
27. Sweden	60. Saudi Arabia	93. Pakistan	126. China	
28. Armenia	61. Belize	94. Ghana	127. Guinea	NOT RATED
29. Trinidad and Tobago	62. Mongolia	95. The Gambia	128. Niger	Congo Democratic Republic
30. Austria	63. United Arab Emirates	96. Mozambique	129. Equatorial Guinea	Iraq
31. Spain	64. Italy	98. Morocco	130. Uzbekistan	Montenegro
32. Georgia	65. Madagascar	99. Zambia	131. Djibouti	Serbia
33. El Salvador	66. Qatar	100. Cambodia	132. Lesotho	Sudan

EXHIBIT 1.1

2008 Index of Economic Freedom.

Source: *The Wall Street Journal*, January 15, 2008.

education for everyone. While that may seem like a great benefit to you as a college student trying to pay spiraling education costs, there are consequences to government intervention in business activity.²¹

Most economies, whether purporting to be socialist or capitalist, are actually a mix of both. The index of economic freedom (Exhibit 1.1) is a good gauge of how much individual freedom exists within a given economic system.²²

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It may surprise you to learn from this figure that the United States ranks only in fifth place on this index. Contrariwise, it probably comes as no surprise that a repressive regime such as that in North Korea places that nation last. Other major economic powers, such as China (126) and Russia (134), have fared well economically over the past few decades despite their low rankings on the freedom index. It will be interesting to watch how these nations perform in the years to come and whether they can sustain growing economies with relatively low rankings on economic freedom.

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The “freedoms” considered in making this list include:

- Business freedom
- Trade freedom
- Fiscal freedom
- Government size
- Monetary freedom
- Investment freedom
- Financial freedom
- Property rights
- Freedom from corruption
- Labor freedom

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1.3.1 Business and Social Responsibility

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The role of business has been a constant source of debate in society, and given its pervasive influence on individual and collective well-being, it will probably always remain a lively topic of conversation and discourse. The role of business has been a constant source of debate in society, and given its pervasive influence on individual and collective well-being, it will probably always remain a lively topic of conversation and discourse.

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For example, in recent times, there has been increasing pressure on business to accept more responsibility for the environment and to develop the so-called “green” or “sustainable” business practices.²³ In part, this is a response to the popular belief that the earth’s climate is warming due, in large measure, to the carbon output produced by economic activity.²⁴ Notice that the actions proposed by groups that support the “green” cause are not necessarily those that businesses would undertake purely on economic factors alone. Thus, these groups want business to respond to political as well as market forces.

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In the capitalist Western world, the social responsibility of business has been debated in terms of:

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- *Social obligation*: This school of thought adheres to the principle of the “business of business is business.” Based on the work of some famous economists, most notably Milton Friedman, Gary Becker, and Ronald Coase from the Chicago School of Business, it is sometimes referred to as the “Chicago School” of thought.²⁵ The most prominent light among these luminaries is Milton Friedman, who was a staunch advocate of human freedom and free

markets. He argued persuasively throughout his lifetime that market forces should dictate how business behaves. Any attempt by business leaders to act other than for the sake of maximizing shareholder value would amount to a form of “taxation without representation.”²⁶ According to this perspective, the social obligation of business is to bring goods and services to market as efficiently as possible. Competition assures that consumers will have choices, and will be able to purchase those goods and services that are within their ability to pay.

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- *Social reaction*: This perspective maintains that business exists within a society and cannot be immune to prevailing social mores and cultural pressures. Those who adopt this view point out that the policies and legal conditions that make business activity possible are socially constructed. As such, businesses should recognize that they exist because of the policy apparatus, and should be reactive to the changes in mores over time. The social reaction view would deem that companies are obliged to change their practices and that more environmentally friendly business practices are necessary.

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- *Social responsiveness*: This view holds that businesses are uniquely positioned within society to not just react to social changes, but to lead them. Proponents believe that the power of large corporations is, in some cases, very similar to the power wielded by national governments. Therefore, General Motors Corporation, for example, were it a country, would be among the richest nations on earth. Clearly, this line of thinking promotes the idea that the level of economic power that large firms possess carries with it the ability to influence the behavior of people within the company and beyond. With such power, companies should lead social causes and be on the forefront of positive change.

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No matter which of these perspectives you find to be closest to your own personal beliefs, it will no doubt continue to be debated and refined. But there is no escaping the fact that business is a human activity, and it does have massive implications for the welfare and sense of well-being for people all around the globe.

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1.3.2 The Mechanics of a “Going Concern”

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We have defined business using the term “going concern” to differentiate it from a short-term project or a hobby. Establishing a going concern usually requires establishing systems that are **repeatable** and **scalable**. Repeatable simply means that the processes designed to produce valuable output for a market can be repeated indefinitely. Scalability means that the repeatable processes can handle increasing market demand over time.

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Repeatable processes

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The principle of a going concern is most evident in repeatable processes that comprise production in a factory. It is useful for anyone interested in technology

ventures to take a tour of a local production facility—no matter what it produces. Most factories today have integrated automation, robotics, information technology, and human labor to create highly efficient and repeatable business processes. Modern approaches to manufacturing emphasize “lean” production processes—where costs are continuously examined and worked out of the system to maximize profits.

p0690 Although factory floor operations offer a vivid example of the mechanics of repeatable business processes, this principle can be applied across any type of business venture. Consider a software development business, such as Google or Microsoft. Here, repeatable processes underlying production are not as evident as they may be on a factory floor. Rather, they are embodied primarily in the policies, both explicit and implicit, that govern the day-to-day work activity of these companies. Thus, it is important to note that the forces that comprise the mechanics of a going concern are both **physical**, i.e., the machinery and tools of the factory floor, and **tacit**, i.e., the policies and rules that workers follow.

p0700 Physical forces are normally explicitly causal. The assembly line is a good example. Here, workers must conform and adapt their activities directly to the causal forces of the line. The speed of the line, its physical configuration, and the tools available to complete assigned tasks all require the worker to adapt to physical features, and there is little room for *interpretation*.

p0710 On the other hand, the tacit forces that shape production—the policies and rules that govern the workplace—are subject to interpretation. As such, many creators of technology ventures find this part of developing repeatable processes the most difficult to implement. Technically oriented individuals and companies often have not been trained formally in management or communication sciences. Yet these skills are extremely important for developing and instilling repeatable processes. Additionally, included within this challenge is the need to align the organization toward common goals and objectives, provide individualized and substantial incentives that motivate people to perform at high levels, and promote openness and collaboration for future growth.²⁷

Scalability

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p0720 Ventures must be able to adjust their output to meet market demand. A technology venture that was not scalable, for example, would not be able to meet demand if customers favored its products and services. This would be a critical error for the founders and investors of the company.

p0730 Scalability relies on a variety of factors, including qualified labor to operate machinery or deliver services, an access to capital to purchase new equipment, and the presence of standard operating procedures that limit variability of output across different production lines or service providers. Managing growth and scaling at an appropriate pace requires a delicate balance that many young technology ventures face. Growing too fast may lead to quality problems that turn customers away. Growing too slowly may lead to opportunities for competitors to race into the market and steal potential new customers.

p0740 Creating the mechanisms that underlie a going concern is a challenge faced by every technology entrepreneur. While establishing the physical features of systematic and repeatable processes may be relatively straightforward, the management and leadership elements can be challenging. Chapter 13 in this textbook explores in greater detail the management and leadership skills that are required to operate a technology venture.

s0190 1.4 BUSINESS DYNAMICS

p0750 During the late 1990s, entrepreneurship programs in business and engineering schools were being overrun with applicants. Everyone wanted to learn the techniques that would help them gain access to the riches that were being created by dot-com ventures. The decade of the 1990s was punctuated repeatedly by stories of soaring stock prices of dot-com companies, instantaneous riches for a legion of Silicon Valley technology mavens, and highly visible public offerings of youthful companies whose values sometimes rose to rival those of the largest industrial companies in the world. These heady times created a generation of optimistic technology entrepreneurs. In 1999, there were 457 IPOs in the United States, most of which were Internet or technology ventures. Of the 457 offerings, 117 of them doubled their price per share on their first day of trading. By way of contrast, there were only 71 IPOs in 2001 and not a single one experienced a first-day doubling in share price.²⁸

p0760 All too soon after it began, however, the “new economy” that many believed was the reason for the wealth they were creating came crashing down around them. The dot-com crash that began in March 2000 was precipitous and unnerving. The confidence that had been building throughout the previous decade was eroded in mere months. The stock market index most closely associated with technology ventures—the National Association of Securities Dealers Automated Quotation system, or NASDAQ—sank nearly 80% from its high of 5,046.86 recorded on March 11, 2000. NASDAQ crumbled from that high to a low of 1,114.11 on October 9, 2002. What took a decade or more to build took a little more than two years to wipe out.

p0770 Business dynamics, thus, change, and the rate of change in technology-oriented industries and businesses can be dizzying. The dot-com crash is still a vivid memory for many current technology venture creators. Nearly \$5 trillion in wealth was wiped out during the crash, and many formerly high-flying entrepreneurs left for more secure jobs in established high-tech companies.

s0200 1.4.1 Change and Competition

p0780 The forces that impinge on technology ventures are many, and in the past few years they have become global in scope. The primary force acting on technology-related businesses is the rapid pace of technological change. Companies that enter a market

with a new technology are likely to encounter staunch competition if the market proves lucrative. Most technology companies attempt to defend their market position, at least in the short term, by developing intellectual property protection, such as patents, trade secrets, and trademarks.

Today, it is increasingly difficult to build a sustainable competitive advantage based solely on a unique bit of intellectual property.²⁹ Patents and other intellectual property vehicles are difficult and costly to protect, especially for technology firms that pursue global markets.³⁰ It is also costly to develop unique intellectual property in many industries, making it difficult to recover those costs during the protected lifetime offered by a patent. Drug companies, for example, must invest tens of millions of dollars to develop a new pharmaceutical, and then additional tens of millions to win approval to distribute the product to the public. A patent protection may last 17 years. The drug company cannot afford to waste time if it wants to earn a positive return.³¹

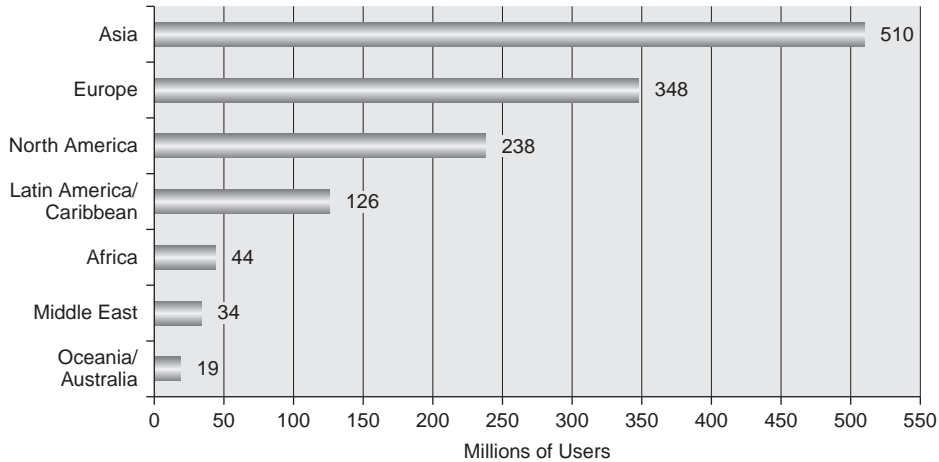
1.4.2 Change and Globalization

In addition to the rapid pace of change and the difficulties inherent in establishing and protecting intellectual property, there are a number of other factors that produce the dynamism in today's technology industries. One of these is globalization. The global economy that we have become used to is, in fact, a very recent phenomenon.³² The primary creator of the global economy was the Internet, and the connectivity to the global workforce that it has enabled. While global trade is as ancient as the Old Silk Road carved out by Marco Polo, the connectivity of global trade and the fluid policy environment in which it now takes place is unprecedented in human history.³³

Technology companies have certainly played a major role in creating the infrastructure for global trade, and they will continue to do so for many years. According to Internet World Stats, a little over 1 billion people now are connected to the Internet (Exhibit 1.2). That figure represents just 16% of the total world population. In other words, more than 80% of the earth's people do not have access to one of the most important technologies of the modern age. Clearly, there is plenty of room for intrepid technology entrepreneurs to continue to serve these vast markets.

1.4.3 Engineering Creative Solutions

Not only are there immense opportunities for technology entrepreneurs to serve vast global markets, there are also a large number of complex challenges crying out for solutions. No doubt the major problems facing human beings in the coming decades will present opportunities for commercially minded engineers and scientists to develop venture-based solutions. The challenges facing engineers, for example, have been discussed and debated by the U.S. National Academy of Engineering (NAE). The NAE asked a distinguished international panel of scientists to identify

**EXHIBIT 1.2**

Internet Users in the World (December 2007).

Note: Total World Internet Users Estimate Is 1,319,872,109 for year-end 2007. Copyright © 2008, Miniwatts Marketing Group—www.internetworldstats.com

the “Grand Challenges for Engineering.”³⁴ The panel identified the following 14 challenges:

- o0010 1. Make solar energy economical
- o0020 2. Provide energy from fusion
- o0030 3. Develop carbon sequestration methods
- o0040 4. Manage the nitrogen cycle
- o0050 5. Provide clean access to water
- o0060 6. Restore and improve urban infrastructure
- o0070 7. Advance health informatics
- o0080 8. Engineer better medicines
- o0090 9. Reverse-engineer the brain
- o0100 10. Prevent nuclear terror
- o0110 11. Secure cyberspace
- o0120 12. Enhance virtual reality
- o0130 13. Advanced personal learning
- o0140 14. Engineer the tools of scientific discovery

Each of these Grand Challenges will undoubtedly require radical thinking, including creative sources of financing, use of materials, and approaches to markets—especially those that are traditionally underserved—and equally creative use of labor and other production factors.

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TECH MICRO-CASE 1.2**The Grameen Bank Project**

Creative sources of financing are beginning to appear in remote regions of the world. The Grameen Bank, for example, was founded in 1976 in the village of Jobra, Bangladesh.¹ It specializes in providing “micro-loans” to the poor people of the region to help them set up and operate their own small businesses. The Grameen Bank Project (Grameen means “rural” or “village” in Bangla) came into operation with the following objectives:

- Extend banking facilities to poor men and women
- Eliminate the exploitation of the poor by money lenders
- Create opportunities for self-employment for the vast multitude of unemployed people in rural Bangladesh
- Bring the disadvantaged, mostly the women from the poorest households, within the fold of an organizational format that they can understand and manage by themselves
- Reverse the age-old vicious circle of “low income, low saving and low investment,” into a virtuous circle of “low income, injection of credit, investment, more income, more savings, more investment, and more income.”

Today, the bank is over 90% owned by the people it serves. The bank’s founder, Dr. Muhammad Yunus, was awarded the Nobel Peace Prize in 2006 for his efforts in providing financing to the underserved masses of Central Asia.

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Creative material uses are occurring more frequently as companies strive to manage product life cycles in response to calls for sustainable economics. Construction companies are using sustainable products to build homes, offices, and urban infrastructure.³⁵ Energy companies are aggressively seeking sustainable alternatives that will release them from dependence on fossil fuels.³⁶ Airlines, furniture manufacturers, soft drink makers, and many, many other types of companies are looking to engineers and scientists to invent and commercialize the sustainable materials of the future.

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Companies are also adopting unique approaches to markets to establish their respective brands. Some of the largest markets in the world are emerging among the vast populations of India, China, and Africa, where new wealth that is creating middle-class lifestyles for millions presents incomparable opportunities for companies that are creative and adaptive enough to expand businesses there. For example, the Chinese government has put out a call to multinational corporations to serve its growing middle class.³⁷ Many companies find themselves shut out of the Chinese market because they are unable to get their costs low enough to offer affordable products there. In response, consumer product companies such as Colgate-Palmolive, Anheuser-Busch, and L’Oréal have shifted their approach to consumers

in the Chinese market, with each developing products or investing in products that meet the unique needs of the Chinese people.

Another way to enter these emerging markets is exemplified by IBM. IBM has made its Indian operations one of its most important locations for delivery of services to clients worldwide. Nearly one-sixth of IBM's global workforce is now based in India.³⁸ Utilizing the labor forces that have demonstrated world-class talent is a trend that is likely irreversible. Companies today are using outsourcing as a strategic ploy to take advantage of the talented labor that exists in all corners of the world. Intel, for example, is building a \$300 million assembly and test facility in Viet Nam. The site is expected to employ more than 1,000 people when it is operational. Intel also has a sales and marketing office in Ho Chi Minh City, providing sales and support at the original equipment manufacturer (OEM), developer, and end-user levels. Set up in 1997, this office drives Intel's initiatives, technologies, products, and services into the marketplace, creating demand and promoting Intel's role in the Internet.³⁹

1.5 THE FUTURE OF BUSINESS

This chapter introduces you, the technical student, to some fundamental concepts of business. The global economy is evolving so rapidly today that it may be overly naive to think that the fundamentals conveyed in this chapter will hold true over the course of the usable life of this textbook. However, there are some business fundamentals that simply do not change, regardless of the changing world. For example, value creation and distribution to a given market will continue to be definitive of business activity. Profit motivation as a driver of innovative value creation will continue to be an important factor as well.

What will change in the coming years is the manner in which value is created, the markets available for any given unit of value, and the business models that will be used to generate profits. Think about the vast changes that have occurred in industrial economies over the past century. The early part of the twentieth century was characterized by vast migrations from agricultural and rural lifestyles to cities and factory or mass production lifestyles. This industrial age lifestyle provided steady work and stable income for millions of people in the industrialized world. During the latter half of the twentieth century, the stability of that lifestyle began to erode as emerging nations built factories that were able to thrive based on cheaper labor and fewer regulatory obligations. Factory work shifting to low-labor-cost regions around the world was only the beginning of the globalization of economics.

The explosion of information technologies in the latter half of the twentieth century led to the information revolution. Chief among the enabling technologies of the information age, of course, is the Internet. Now nearly global in reach, the Internet has enabled unparalleled value creation opportunities, and has opened new markets as well. The practice of business process outsourcing (BPO) was largely enabled by the spread of broadband technologies.⁴⁰ As large companies shifted

information-related work to knowledge-worker hotspots like Bangalore and Manila, increasing numbers of people in those regions joined the burgeoning global middle class. With their new found wealth came demands for the goods and services common to middle-class people everywhere: automobiles, appliances, electronics, furniture, and a wide variety of foods. These emerging regions became new market targets for companies that had previously seen them as too poor or too remote to serve. Now, companies from General Motors to P&G are scrambling to understand the unique product, service, and distribution needs of these global markets.

SUMMARY

This chapter is designed for engineers and scientists who have had little or no prior exposure to business, management, or economics. Although the chapter title “Fundamentals of Business” suggests a comprehensive overview, in reality that would be impossible in a single chapter. Business is all-pervasive in modern society and exceedingly complex.

We defined business as “an organized and purposeful human activity designed to create value for others and to exchange that value for something else of equal or of greater value (usually, money) and that is intended to continue to provide such value over time as a going concern.” The main themes of this definition were identified as “organized activity,” “purposeful,” “going concern,” and “value.”

The focus of this textbook is on value creation, value protection, and value capture. These themes will be expanded in greater detail in respective sections of this textbook. In brief, the job of the technology entrepreneur is to create value for a market, protect that value via intellectual property rights and other means, and capture that value through the growth of the enterprise and retention of ownership. The venture’s value to customers is summarized in what we refer to as the “value proposition.”

The role of business in society has long been debated. This issue came to the fore again in 2008 when many business failures around the world led people to question how best to govern and control business activity. As the question affects how one thinks of business and entrepreneurship, we consider some alternative answers that have been proposed.

The three proposed answers to the question of the role of business in society were expressed as social obligation, social reaction, and social responsiveness. These three perspectives are very different and, depending on which one you subscribe to, will influence the type of technology venture you pursue.

As a going concern, entrepreneurial ventures must strive for respectable processes that are also scalable. That means the business will be able to serve growing demand and pursue new markets.

Finally, this chapter discussed several of the dynamic forces that are affecting business in the twenty-first century. These include accelerated change and competition, globalization of a wide range of industries, and the Grand Challenges identified by the NAE.

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STUDY QUESTIONS

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1. What are the two primary elements of a going concern?

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2. What does it mean to say that a business is a purposeful activity?

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3. How does a business determine whether or not its products and services are valuable? Define the relationship between price and quality, and their effects on value.

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4. Explain the role of a value proposition for a business. What is the value proposition for YouTube?

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5. Describe how a capitalist economy differs from a socialist economy.

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6. This chapter defined three different perspectives regarding the social responsibilities of business. Name each and briefly explain each perspective.

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7. This chapter identified two primary dynamics driving technology ventures in the modern age. Define each and briefly identify how technology ventures can or should deal with each of these elements.

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8. How should a person master the fundamental concepts of business? (HINT: Use the Tiger Woods example as part of your explanation.)

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EXERCISES

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1. Name at least five of the so-called “Grand Challenges” identified by the National Academy of Engineering.

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2. Pick one of the Grand Challenges and identify one or two business ideas that address the challenge.

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KEY TERMS

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■ **Business as a going concern:** Businesses are organized to pursue profits in the short term and over time. They differ from projects or hobbies in that they do not have a predetermined end date or singular definition of success.

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■ **Business as an organized activity:** Business requires that resources be organized to deliver value to a market. Resources include, but are not limited to, land, labor, and capital.

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■ **Business as a purposeful activity:** Business requires that the resources that have been organized be put to purposeful use.

- u0280 ■ **Business model:** The way a business makes money.
- u0290 ■ **Physical factors:** Technology venture managers must adjust physical assets to ensure that its production processes are repeatable and scalable.
- u0300 ■ **Repeatable:** One of the mechanical elements of a business is to make the production or service providing processes repeatable.
- u0310 ■ **Scalable:** One of the mechanical elements of a business is to make the production or service providing processes scalable. That is, as the business grows it should be able to expand its repeatable processes to meet greater customer demand.
- u0320 ■ **Social responsibility as social obligation:** This is a perspective on the social responsibility of business that is associated with the Chicago School of thought. It holds that business should focus on making profits for owners as its primary concern.
- u0330 ■ **Social responsibility as social reaction:** This perspective holds that business is possible via the rules of society. As such, a business should respond to changing social mores and adapt its practices accordingly.
- u0340 ■ **Social responsibility as social responsiveness:** This perspective holds that business is a social leader, and that companies should be early exemplars of new and improved social practices.
- u0350 ■ **Tacit factors:** Technology venture managers must adjust the policies and operating procedures to ensure that its production processes are repeatable and scalable.
- u0360 ■ **System:** Business systems are put in place to create the going concern element of a business.
- u0370 ■ **Value:** In business, value is determined by a market or markets, and is often expressed via the equation: $\text{Value} = \text{Price} \times \text{Quality}$.
- u0380 ■ **Value proposition:** The value that a business brings to a market is expressed in its value proposition.

WEB RESOURCES

- s0290
- p1450 The web sites below are intended as destinations for your further exploration of the concepts and topics discussed in this chapter:
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 1. <http://en.wikipedia.org/wiki/Business>: This is the Wikipedia section on business. It has a very thorough list of related topics that you can also link to and explore in case any particular area of business is of more interest to you than others.

- o0260 2. <http://www.cnn.com>: This is the web site for the leading business and finance channel on television. CNN is known for its continuous stream of stock prices and wide range of programming on contemporary business and industry topics.
- o0270 3. <http://www.wsj.com>: *The Wall Street Journal* may be the most well-known business publication in the world. If you want to keep track of developments in business and economics on a daily basis, a subscription to this newspaper will help you do that.
- o0280 4. <http://www.ft.com>: *The Financial Times* is a London-based publication that has more international news coverage than *The Wall Street Journal*.
- o0290 5. <http://www.businessweek.com>: *Business Week* is a print publication that has a very useful and informative web site. Updated daily rather than weekly like its print brethren, the *Business Week* web site is a good source of analysis on current business events.
- o0300 6. <http://www.fortune.com>: *Fortune* magazine is differentiated from *Business Week* in its focus on longer stories about business and the leaders who make business work.
- o0310 7. <http://www.forbes.com>: *Forbes* magazine was founded by the Forbes family and is currently headed by former U.S. presidential candidate, Steve Forbes. Its articles focus on economic issues more than those featured in *Business Week* or *Fortune*.
- o0320 8. <http://www.economist.com>: *The Economist* is a European publication that provides perspective on global business and economic issues. It is a useful counterbalance to U.S.-centered publications like the ones listed above.
- o0330 9. <http://money.cnn.com/magazines/business2/>: This web site is a remnant of the dot-com era, called Business 2.0. The “2.0” label was intended to indicate that a new form of business was emerging in what some called the “new economy.” That conceit is no longer held by most people, but this web site still covers a lot of really interesting businesses.
- o0340 10. <http://www.redherring.com>: *Red Herring* magazine is a leading technology venture publication.

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