Entrepreneurs develop novel solutions to key challenges, fueling progress in societies worldwide. They use innovation and technology to foster positive impact and activity in all facets of life. Entrepreneurs identify, develop, and communicate the essence of an opportunity that has attractive potential to become a successful venture. They describe the valuable contributions of the venture, and they design a business model that can adapt to changing circumstances. The venture team creates a road map (strategy) that can, with good chance, effectively lead to the commercialization of the new product or service in the marketplace with a sustainable competitive advantage.
The Role and Promise of Entrepreneurship

Strive not to be a success, but rather to be of value.
Albert Einstein

What drives global entrepreneurship?

Entrepreneurs strive to make a difference in our world and to contribute to its betterment. They identify opportunities, mobilize resources, and relentlessly execute on their visions. In this chapter, we describe how entrepreneurs act to create new enterprises. We identify firms as key structures in the economy and the role of entrepreneurship as the engine of economic growth. New technologies form the basis of many important ventures where scientists and engineers combine their technical knowledge with sound business practices to foster innovation. Entrepreneurs are the critical people at the center of all of these activities.
1.1 Entrepreneurship in Context

From environmental sustainability to security, from information management to health care, from transportation to communication, the opportunities for people to create a significant positive impact in today’s world are enormous. Entrepreneurs are people who identify and pursue solutions among problems, possibilities among needs, and opportunities among challenges.

Entrepreneurship is more than the creation of a business and the wealth associated with it. It is the opportunity to create value and the willingness to take a risk to capitalize on that opportunity [Hagel, 2016]. Entrepreneurs can launch great and reputable firms that exhibit performance, leadership, and longevity. In Table 1.1, look at the examples of successful entrepreneurs and the enterprises they created. What contributions have these people and organizations made?

### TABLE 1.1 Selected entrepreneurs and the enterprises they started.

<table>
<thead>
<tr>
<th>Entrepreneur</th>
<th>Enterprise(s) started</th>
<th>Age of entrepreneur at time of start</th>
<th>Year of start</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Benioff</td>
<td>Salesforce.com (USA)</td>
<td>35</td>
<td>1999</td>
</tr>
<tr>
<td>Jeff Bezos</td>
<td>Amazon.com (USA)</td>
<td>31</td>
<td>1995</td>
</tr>
<tr>
<td>Sergey Brin</td>
<td>Google (USA)</td>
<td>27</td>
<td>1998</td>
</tr>
<tr>
<td>Jack Dorsey</td>
<td>Twitter, Square (USA)</td>
<td>30</td>
<td>2006</td>
</tr>
<tr>
<td>Rosalia Goyanechea</td>
<td>Zara (Spain)</td>
<td>31</td>
<td>1975</td>
</tr>
<tr>
<td>Diane Greene</td>
<td>VMWare (USA)</td>
<td>42</td>
<td>1998</td>
</tr>
<tr>
<td>Ma Huateng</td>
<td>Tencent Inc. (China)</td>
<td>27</td>
<td>1998</td>
</tr>
<tr>
<td>Mo Ibrahim</td>
<td>Celtel (Africa)</td>
<td>42</td>
<td>1998</td>
</tr>
<tr>
<td>Steve Jobs</td>
<td>Apple (USA)</td>
<td>21</td>
<td>1976</td>
</tr>
<tr>
<td>Sandra Lerner</td>
<td>Cisco (USA)</td>
<td>29</td>
<td>1984</td>
</tr>
<tr>
<td>Robin Li</td>
<td>Baidu (China)</td>
<td>32</td>
<td>2000</td>
</tr>
<tr>
<td>Jack Ma</td>
<td>Alibaba.com (China)</td>
<td>35</td>
<td>1999</td>
</tr>
<tr>
<td>Elon Musk</td>
<td>X.com, SpaceX, Tesla, SolarCity (USA)</td>
<td>27</td>
<td>1999</td>
</tr>
<tr>
<td>Hasso Plattner</td>
<td>SAP (Germany)</td>
<td>28</td>
<td>1972</td>
</tr>
<tr>
<td>Linda Rottenberg</td>
<td>Endeavor (Chile, Argentina)</td>
<td>28</td>
<td>1997</td>
</tr>
<tr>
<td>Gil Shwed</td>
<td>Check Point (Israel)</td>
<td>25</td>
<td>1993</td>
</tr>
<tr>
<td>Tulsi Tanti</td>
<td>Suzlon Energy (India)</td>
<td>37</td>
<td>1995</td>
</tr>
<tr>
<td>Muhammed Yunus</td>
<td>Grameen Bank (India)</td>
<td>36</td>
<td>1976</td>
</tr>
<tr>
<td>Nikalas Zennstrom</td>
<td>Skype, Kazaa (Sweden)</td>
<td>37</td>
<td>2003</td>
</tr>
<tr>
<td>Mark Zuckerberg</td>
<td>Facebook (USA)</td>
<td>20</td>
<td>2004</td>
</tr>
</tbody>
</table>
What organization would you add to the list? What organization do you wish you had created or been a part of during its formative years? What organization might you create in the future?

Entrepreneurs seek to achieve a certain goal by starting an organization that will address the needs of society and the marketplace. They are prepared to respond to challenges, to overcome obstacles, and to build an enterprise.

For an entrepreneur, a **challenge** is a call to respond to a difficult task and to make the commitment to undertake the required enterprise. Richard Branson, the creator of Virgin Group, reported [Garrett, 1992]: “Ever since I was a teenager, if something was a challenge, I did it and learned it. That’s what interests me about life—setting myself tests and trying to prove that I can do it.”

Thus, entrepreneurs are resilient people who pounce on challenging problems, determined to find a solution. They combine important capabilities and skills with interests, passions, and commitment. In 2004, Elon Musk realized that environmental sustainability was not a priority for the car industry, and that legacy car manufacturers were reticent to make the investments necessary to develop electric cars. He founded Tesla with the mission to introduce a high-performance, mostly electric car. Musk raised financial capital by drawing on his connections in Silicon Valley to start a paid waiting list for the company’s first model, the Tesla Roadster. Tesla was late to deliver and, in 2007, Silicon Valley blog *Valleywag* named the Roadster its “#1 Tech Company Fail of the Year.” That negative media attention, combined with a declining economy that heavily impacted the automotive industry, caused many of Tesla’s investments to dry up. In 2008, Musk invested his own money into the company and pleaded with investors to match him. Tesla released the Roadster that year and subsequently raised another round of funding. In 2012, Tesla released the Model S sedan, which became the best-selling plug-in electric car of 2015. In 2018, Tesla released the Model 3, with a price comparable to that of other nonelectric sedans. Musk’s ability to identify an opportunity within a challenge and resilience to push through adversity have allowed Tesla to make significant progress toward achieving sustainability, both environmentally and financially.

Musk and other entrepreneurs identify the direction of needs in society and, drawing upon available knowledge and resources, respond with a plan for change. This typically involves recombining people, concepts, and technologies into an original solution. In the case of the Roadster, Tesla partnered with existing companies such as Lotus to leverage their knowledge of car design and powetrains, developed their own in-house technology where needed, and matched the final product to a network of Silicon Valley investors. Musk matched his passions and resources to capitalize on an opportunity.

An **opportunity** is a favorable juncture of circumstances with a good chance for success or progress. Attractive opportunities combine good timing with realistic solutions that address important problems in favorable contexts. It is the job of the entrepreneur to locate new ideas, to determine whether they are actual opportunities, and, if so, to put them into action. Thus, entrepreneurship may be described as the nexus of enterprising individuals and promising opportunities...
[Shane and Venkataraman, 2000]. As illustrated in Figure 1.1, the “sweet spot” exists where an individual’s or team’s passions and capabilities intersect with an attractive opportunity.

Entrepreneurship is not easy. Only about one-third of new ventures survive their first three years. As change agents, entrepreneurs must be willing to accept failure as a potential outcome of their venture. But, a person can learn to act as an entrepreneur, and can minimize the downside of failure, by trying the activity in a low-cost manner.

After identifying a problem and a proposed solution, the first step is to recognize the hypotheses associated with an idea; What assumptions is the entrepreneur making when concluding that an identified problem is really a problem and that a proposed solution is good and realistic? Then, the entrepreneur can test these hypotheses by engaging with knowledgeable individuals, such as potential customers, employees, and partners. Through these small experiments, the entrepreneur not only develops contacts and mentors critical for executing upon an idea [Baer, 2012], but also learns more about the opportunity, and what changes
may be necessary to make it viable. In this way, entrepreneurship is akin to the scientific method, in that entrepreneurs seek to gather data in connection with hypotheses, and they refine their ideas based upon their findings [Sarasvathy and Venkataraman, 2011]. Put simply, as Y Combinator founder Paul Graham advises, there are three key things necessary to creating a successful startup: start with good people, make something that people actually want and are willing to pay for, and spend as little money as possible while you validate the market and your product acceptance by buyers [Graham, 2005].

If team members identify an opportunity that attracts them and matches their skills, they next obtain the resources necessary to implement their solution. Finally, they launch and grow an organization, which can grow to have a massive impact, like those enterprises listed in Table 1.1. The four steps to starting a business appear in Table 1.2. Most entrepreneurs repeat these steps multiple times as they work to validate an opportunity, making continual adjustments as they learn more.

Ultimately, entrepreneurship is focused on the identification and exploitation of previously unexploited opportunities. Fortunately for the reader, successful entrepreneurs do not possess a rare entrepreneurial gene. Entrepreneurship is a systematic, organized, rigorous discipline that can be learned and mastered [Drucker, 2014]. This textbook describes how to identify true business opportunities and how to start and grow a high-impact enterprise.

### 1.2 Economics, Capital, and the Firm

All entrepreneurs are workers in the world of economics and business. **Economics** is the study of the production, distribution, and consumption of goods and services. Society, operating at its best, works through entrepreneurs to effectively manage its material, environmental, and human resources to achieve widespread prosperity. An abundance of material and social goods equitably distributed is the goal of most social systems. Entrepreneurs are the people who arrange novel organizations or solutions to social and economic problems. They are the people who make our economic system thrive [Baumol et al., 2007].

According to Global Entrepreneurship Monitor (GEM) researchers, the United States maintained about a 12 percent entrepreneurial activity rate between 1999 and 2015. Thus, more than one in ten U.S. adults was engaged in setting up or managing a new enterprise during that period [Kelley et al., 2016].

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**TABLE 1.2 Four steps to starting a business.**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The founding team or individual has the necessary skills or acquires them.</td>
</tr>
<tr>
<td>2.</td>
<td>The team members identify the opportunity that attracts them and matches their skills. They create a solution to match the opportunity.</td>
</tr>
<tr>
<td>3.</td>
<td>They acquire (or possess) the financial and physical resources necessary to launch the business by locating investors and partners.</td>
</tr>
<tr>
<td>4.</td>
<td>They complete an arrangement or contract with their partners, with investors, and within the founder team to launch the business and share the ownership and wealth created.</td>
</tr>
</tbody>
</table>
These entrepreneurs have had a tremendous impact on U.S. economic growth. For example, venture capital funds, which invest in companies led by entrepreneurs, provided most of the early external funding for three of the five largest U.S. public companies by market capitalization—Apple, Google, and Microsoft. Of the 1,339 U.S. public companies founded after 1974, 556 were venture backed, representing 63 percent of the market capitalization and 85 percent of total R&D of the post-1974 public companies [National Venture Capital Association, 2016]. Another 2010 study found that for all but seven years between 1977 and 2005, existing firms were net job destroyers, losing a combined average of 1 million jobs per year. By contrast, new firms in their first year added a combined average of 3 million jobs [Kane, 2010]. Venture-backed companies such as Amazon, Netflix, Apple, Google, Facebook, and Salesforce have accounted for significant new employment over the past two decades.

An economic system is a system that produces and distributes goods and services. Given the limitations of nature and the unlimited desires of humans, economic systems are schemes for (1) administering scarcities and (2) improving the system to increase the abundance of goods and services. For a nation as a whole, its wealth is its housing, transportation, health care, and other goods and services. Nations strive to secure more prosperity by organizing to achieve a more effective and efficient economic system. It is entrepreneurs who organize and initiate that change.

Almost all variation in living standards among countries is explained by productivity, which is the quantity of goods and services produced from the sum of all inputs, such as hours worked and fuels used. A model of the economy is shown in Figure 1.2. The inputs to the economy are natural capital, financial capital, and intellectual capital. The outputs are the desired benefits and the undesired waste. An appropriate goal is to maximize the beneficial outputs and minimize the undesired waste.

Natural capital refers to those features of nature, such as minerals, fuels, energy, biological yield, or pollution absorption capacity, that are directly or indirectly utilized, or could be utilized, in human social and economic systems. Because of the nature of ecologies, natural capital may be subject to irreversible change at certain thresholds of use or impact. For example, global climate change poses a serious threat to sources of natural capital. Financial capital refers to
financial assets, such as money, bonds, securities, and land, which allow entrepreneurs to purchase what they need to produce goods and services.

**Intellectual capital** includes the talents, knowledge and creativity of people, the efficacy of management systems, and the relationships between various people and organizations. The sources of intellectual capital are threefold: human capital, organizational capital, and social capital. **Human capital (HC)** is the combined knowledge, skills, and abilities in a population. For example, Google seeks to maximize its human capital by attracting talented individuals at the top of their respective fields. **Organizational capital (OC)** is the hardware, software, databases, patents, learning capabilities, cultural features, and management methods that support the human capital. For example, Amazon’s peer feedback system ensures that good work does not go unnoticed and encourages a more open atmosphere. **Social capital (SC)** is the quality of relationships between people and organizations, along with the impact of these relationships. For example, Asana sponsors team outings and culinary programs to build community among its employees. These elements of intellectual capital appear in Table 1.3.

The economy as portrayed in Figure 1.2 consists of the summation of all organizations, for-profit as well as nonprofit and governmental, that provide the beneficial outputs for society. These are the organizations that we study and will label as enterprises or firm.* Entrepreneurs constantly form new enterprises to meet social and economic needs.

The purpose of a firm is to establish an objective and mission and carry it out for the benefit of the customer. Thus, the purpose of Merck Corporation is to create pharmaceuticals that protect and enhance its customers’ health. To carry out its purpose, each individual firm transforms inputs into desirable outputs that serve the needs of customers.

A model of the firm as a transformation entity is shown in Figure 1.3. The transformation of inputs into desired outputs is based primarily on the entrepreneurial capital and the intellectual capital of the firm. **Entrepreneurial capital (EC)** can be formulated as a product of entrepreneurial competence and entrepreneurial commitment [Erikson, 2002]. **Entrepreneurial competence** is the ability to (1) recognize opportunity, and (2) gather and manage the resources necessary to capitalize upon the opportunity. The accretion of knowledge and experience over time leads to increased competence as people mature.

---

TABLE 1.3 Three elements of intellectual capital (IC).

<table>
<thead>
<tr>
<th><strong>Human capital (HC):</strong></th>
<th>The skills, capabilities, and knowledge of people</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organizational capital (OC):</strong></td>
<td>Technologies, processes, characteristics and methods</td>
</tr>
<tr>
<td><strong>Social capital (SC):</strong></td>
<td>The quality of the relationships with others, such as customers, suppliers, and partners</td>
</tr>
</tbody>
</table>

IC = HC + OC + SC

---

* Henceforth, we use the terms enterprise and firm interchangeably to represent organizations such as businesses, startups, and ventures.
Entrepreneurial commitment is a dedication of the time and energy necessary to bring the enterprise to initiation and fruition. Maintaining commitment of energy and time can become a challenge as people become less interested in or available for the necessary entrepreneurial activities. Both commitment and competence are required to provide significant entrepreneurial capital, and they are required qualities of the leadership team. The presence of competence without any commitment creates little entrepreneurial capital. The presence of commitment without competence may waste both time and resources.

The intellectual capital of a firm can be thought of as the sum of its knowledge assets. This knowledge is embodied in the talent, know-how, and skills of the members of an organization. Thus, a firm needs to attract and retain the best people for its requirements in the same way that it seeks the best technologies or physical assets. Knowledge is one of the few assets that grows when shared. By organizing itself around its intellectual capital, a new firm can enable its employees to collaborate, learn, and grow, thus further enhancing the firm’s intellectual capital.

The firm’s intellectual capital is critical to its mission and purpose. Figure 1.4 depicts the business theory of a firm, or how it understands its total activities, resources, and relationships. First, a firm is clear about its mission and purpose. Second, the firm must know and understand its customers, suppliers, and competitors. Third, a firm’s intellectual capital is understood, renewed, and enhanced as feasible. Finally, the firm must understand its environment or context, which is set by society, the market, and the technology available to it. One hundred years ago, firms were hierarchical and bureaucratic with a theory of business that emphasized making long runs of standardized products. They regularly introduced “new and improved” varieties and provided lifetime employment. Today, firms compete globally with high-value, customized products. They use flattened organizations and base their future on intellectual capital. Firms look to brands and images to cut through the clutter of messages. In the future, a firm’s human capital—talent—will become even more important.

As an example of how a firm leverages entrepreneurial capital and intellectual capital to transform inputs into outputs, consider Facebook. From its founding, in 2004, until the company hit 300 million users and became cash flow
positive in 2009, Facebook operated at a loss. By listening to the desires of users and the needs of society, Mark Zuckerberg opted to forego ads and sponsorship until he could find a way to make them unobtrusive and, thanks to machine-learning software, tailored to be helpful.

1.3 Creative Destruction

One view of economic activity describes a world of routine in which little changes. In this static model, all decisions have been made, and all alternatives are known and explored. But clearly, no economy is static, and change appears to be certain.

Dynamic capitalism is the process of wealth creation characterized by the dynamics of new, creative firms forming and growing and old, large firms declining and failing. In this model, it is disequilibrium—the disruption of existing markets by new entries—that makes capitalism lead to wealth creation [Thurick et al., 2013]. New firms are formed by entrepreneurs to exploit and commercialize new products or services, thus creating new demand and wealth. This renewal and revitalization of industry leads to a life cycle of formation, growth, and decline of firms.

The recorded music industry provides a good example of waves of change. Music lovers listened to their favorite music recorded on vinyl discs until about 1980, when cassette tapes grew in popularity. The compact size and recordability
of the cassette tape caused a massive shift from vinyl records to tape. By the late 1980s, however, compact discs (CDs) overshadowed cassettes, due to the CD’s better sound quality and instant access to tracks. In turn, the CD business peaked in 1995 just as the Internet was gaining momentum in society at large. A few years later, peer-to-peer file transfer began to allow piracy of music. By 2001, Apple had introduced the iPod and iTunes and eventually gained a commanding position in the music distribution and sales business. Today, several firms compete to provide music streaming services. In a dynamic economy, companies need to reinvent their business arrangements or end up becoming irrelevant.

Joseph Schumpeter (1883–1950) described this process of new entrepreneurial firms and waves of change as **creative destruction**. Born and educated in Austria, Schumpeter taught at Harvard University from 1932 until his death in 1950. His most famous book, *Capitalism, Socialism and Democracy*, which appeared in 1942 [Schumpeter, 1984], argued that the economy is in a perpetual state of **dynamic disequilibrium**. Entrepreneurs upend the established order, unleashing a gale of creative destruction that forces incumbents to adapt or die. Schumpeter argued that the concept of perfect competition is irrelevant because it focuses entirely on market (price) competition, when the focus should be on technological competition. Creative destruction incessantly revolutionizes the economic structure from within, destroying the old structure and creating a new one. When the Standard and Poor’s (S&P) 500 Index was established in 1957, the average life span of a company was 61 years. Today, it is just 18 years [Foster and Kaplan, 2012]. Fewer than four of the top 25 technology companies 30 years ago are still leaders today—perhaps only IBM and Hewlett-Packard.

In a world of change, entrepreneurs seek to embrace it. Entrepreneurs match ideas for change with opportunity. These changes include the adoption of new and better (or cheaper) sources of input supplies, the opening of new markets, and the introduction of more profitable forms of business organization.

The profit of the new firm is the key to economic growth and progress. By introducing a new and valuable product, the innovator obtains temporary monopoly power until rivals figure out how to mimic the innovation. Lower costs may give the innovative firm profits higher than those of its rivals, which must continue to sell at higher prices to cover their higher expenses. Alternatively, a superior product may permit a price above that charged by other firms. The same concept clearly fits all forms of successful change. The business system works to drive out inefficiency and forces business process renewal.

Economic progress is reflected in productivity growth, which provides for increases in people’s standard of living. Over the past half-century, the U.S. workforce (including immigration) has grown at about 1.7 percent annually, and productivity per worker has risen at 2.2 percent, generating real economic growth (excluding inflation) averaging 3.9 percent. This is an excellent record, due in great part to the impact of technology entrepreneurship.

Rising output per worker comes from two sources: (1) new technology and (2) smarter ways of doing work. Both paths have been followed throughout human history, and they became faster tracks with the coming of the Industrial
Revolution. The twentieth century started with new techniques of management and many new inventions. The century ended with smarter management techniques and dramatic advances in electronic technology, which helped revive productivity growth after limited gains through much of the 1970s and 1980s.

The free spirit of entrepreneurs provides the vital energy that propels this capitalist system. During the past 30 years, the forces of entrepreneurship, competition, and globalization have encouraged new technologies and business methods that raise efficiency and efficacy. In recent years, due to competition, many of the benefits of strong productivity have flowed to consumers in the form of lower prices. Together, innovation, entrepreneurship, and competition are important sources of productivity growth.

1.4 Innovation and Technology

Little doubt now exists that the economy is driven by firms that capitalize on change, technology, and challenge. This book is focused on helping the reader to purposefully become an agent of creative destruction by creating his or her own firm. An example of an agent of creative destruction is Joe DeSimone, a professor at University of North Carolina, Chapel Hill. DeSimone founded the 3D-printing company Carbon around his patented technology that cuts printing time by orders of magnitude with quality suitable for large-scale manufacturing systems.

New technologies such as these are often a source of disequilibrium or discontinuity, and Schumpeter’s theory was based on disruptive, or “radical,” innovations. Technology includes devices, artifacts, processes, tools, methods, and materials that can be applied to industrial and commercial purposes. For example, Intel was formed to apply semiconductor technology to the design and manufacture of semiconductor circuits. Microsoft was formed to create and distribute computer software products for applications in industry and the home. Apple has reshaped itself around mobile communications and mobile media technologies.

Modern entrepreneurial firms breed a constant flow of high-impact products that create value and stimulate economic growth by bringing new methods, technologies, and ideas to the global marketplace [Schramm, 2004]. Figure 1.5 illustrates “waves” of innovation based upon different technologies throughout history. Modern entrepreneurial firms are at the forefront of the sixth wave, which includes robotics, artificial intelligence, autonomous vehicles, drones, nanotechnology, genomics, and sustainability-oriented technologies [Dixon, 2016].

Sustainability has emerged as an important consideration alongside most new (and existing) firms. Population growth and a worldwide rising middle class, combined with tightening energy supplies and fears of climate change, have prompted a move toward socially and environmentally responsible business. The goal is to provide widespread housing, transportation, health care, and energy while using less energy and emitting less pollution and carbon dioxide. The concept is to use knowledge and innovation to create and implement sustainable
energy systems and to increase resource productivity [Friedman, 2008]. Examples of sustainability-oriented solutions that may be good opportunities for entrepreneurs include improving smart control of the electricity grid, developing high-efficiency biofuel systems, and pursuing “green chemistry” approaches that minimize waste and energy while still providing beneficial products.

As the green technology movement highlights, technology entrepreneurship is based upon intellectual capital. One hundred years ago, successful companies such as U.S. Steel were primarily managing physical assets. By contrast, today’s successful firms, such as Microsoft and Palantir, manage knowledge and intellectual capital. In fact, for many, if not most, firms, intellectual capital is the organization’s most important asset, more valuable than its other physical and financial assets.

While innovation and intellectual assets are critical, a dynamic economy ultimately rests on the actions of entrepreneurs who assume and accept the benefits and risks of an initiative. It is people acting as leaders, organizers, and motivators who are the central figures of modern economic activity.

Three factors make up entrepreneurial action: (1) a person or group who is responsible for the enterprise, (2) the purposeful enterprise, and (3) initiation and

---

**FIGURE 1.5** Waves of innovation throughout history.
growth of the enterprise. The individuals responsible for the organization are described in Section 1.5. The purposeful enterprise may be a new firm organized for a suitable and attractive purpose or a new unit within or separated from an existing business corporation. Furthermore, the organization may be based on radical innovation, incremental changes, imitation, or rent-seeking behavior.

In the first type of enterprise, the entrepreneur engages in an innovative activity that results in novel methods, processes, and products. The second form emphasizes the founding and management of a business that builds upon and improves an existing product or service. The imitative venture is founded by an entrepreneur who is involved in the rapid dissemination of an innovative idea or process. This person or group finds a novel innovation and transfers it to another environment, region or country. The final means of entrepreneurship is called rent-seeking or profit-seeking and focuses on the use of regulation, standards, or laws to appropriate some of the value of a monopoly that is generated somewhere in the economy.

In this book, we emphasize the first kind of activity: the creation of a venture that capitalizes on technological changes and that will have a significant impact on a region, a nation, or the world. A new regulation or clever financial restructuring may afford the entrepreneur a new opportunity, but a radical or transforming innovation may provide the entrepreneur with an important opportunity to make a productive and significant contribution to the world as we know it.

1.5 The Technology Entrepreneur

The critical people at the center of all of these activities are entrepreneurs. The entrepreneur is a bold, imaginative deviator from established business methods and practices who constantly seeks the opportunity to commercialize new products, technologies, processes, and arrangements [Baumol, 2002]. Entrepreneurs thrive in response to challenges and look for unconventional solutions. They apply creativity, create visions, and build stories that explain their visions, and then act to be part of the solution. They forge new paths and risk failure, but persistently seek success. Entrepreneurs distinguish themselves through their ability to accumulate and manage knowledge, as well as their ability to mobilize resources to achieve a specified business or social goal [Kuemmerle, 2002].

Entrepreneurs engage in eight key activities, as described in Table 1.4. They identify and select opportunities that match their skills and interests; they acquire and mobilize financial, physical, and human resources; and they start and grow organizations, cognizant of their broader context.

In order to successfully pursue these activities, entrepreneurs should possess several important capabilities, as noted in Table 1.5. Entrepreneurs are opportunity driven and work to find a strategy that can reasonably be expected to bring that opportunity to fruitful success. They seek new means or methods and are willing to commit to solving a social or business problem that will result in success. Entrepreneurs work toward needing shorter time periods to decide on an appropriate strategy and seize opportunities. Entrepreneurs have a passion to
Entrepreneurs exhibit robust confidence [Hmieleski and Baron, 2009]. Yet they avoid overconfidence that can stymie openness to feedback [Navis and Ozbeck, 2016]. Entrepreneurial innovators also tend to exhibit high self-efficacy—the belief that they can organize and effectively execute actions to produce desired attainments [Markman et al., 2002]. They believe they possess the capabilities and insights required for the entrepreneurial task. Empirically, entrepreneurs with prior startup experience perform better than those without such experience, even if the experience was a failure [Paik, 2014]. Entrepreneurs with experience in the industry in which the new venture will be operating also
TABLE 1.6 Elements of the ability to overcome a challenge.

<table>
<thead>
<tr>
<th>Ability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to deal with a series of tough issues</td>
<td>Willing to work hard and not expect easy solutions</td>
</tr>
<tr>
<td>Able to create solutions and work to perfect them</td>
<td>Well-developed problem-solving skills</td>
</tr>
<tr>
<td>Able to handle many tasks simultaneously</td>
<td>Able to learn and acquire the skills needed for the tasks at hand</td>
</tr>
<tr>
<td>Resilient in the face of setbacks</td>
<td></td>
</tr>
</tbody>
</table>

perform better, due not only to their related technical skill but also to their knowledge of marketing and the regulatory environment in a sector [Chatterji, 2009]. The best entrepreneurs combine both experience and talent [Eesley and Roberts, 2012].

Good entrepreneurs seek to be flexible so they can adapt to changing conditions and reduce the risks of the venture. They are resilient in the face of setbacks, able to multitask, and exercise well-developed problem-solving skills to overcome challenges. Table 1.6 lists some of the elements of this ability.

Finally, entrepreneurs create an overarching vision of the venture and use it to motivate employees, allies, and financiers. Perhaps the most important qualities or characteristics of an entrepreneur are the abilities to accomplish the necessary tasks, meet goals, and inspire others to help with these tasks. Successful entrepreneurial teams attract, train, and retain intellectually brilliant and educated people capable of multidisciplinary insights [van Praag, 2006].

Members of the entrepreneurial team must, therefore, exhibit leadership qualities. **Leadership** is the ability to create change or transform organizations. Leadership within an organization enables the organization to adapt and change as circumstances require. A real measure of leadership is the ability to acquire needed new skills as the situation changes.

Entrepreneurs vary widely in their backgrounds. Recall the list of entrepreneurs in Table 1.1. The age of these people when they launched their enterprises ranges from 20 to 42. A 2014 study of Silicon Valley’s top founders revealed that the median age at founding was 30 years old, and many founders are much older [Lee-Woolfe, 2014]. Entrepreneurship is a lifelong pursuit that is accessible to people of all ages.

Entrepreneurs are also well educated. Ninety-two percent of technology entrepreneurs surveyed by the Kauffman Foundation hold a bachelor’s degree, 31 percent hold a master’s degree, and 10 percent hold a Ph.D. At the same time, however, institutions such as the Grameen Bank, which lends primarily to women in the third world so that they can start businesses, have opened up entrepreneurship as a possibility for a wide range of people.

In general, entrepreneurs should have most of the qualities listed in Table 1.5 in order to participate in a new venture. But not everyone will have the same blend of capabilities. In order to strengthen, diversify, and complement an organization’s skills, insights, resources, and connections, most entrepreneurs work as part of a team.
Moreover, entrepreneurship is an attitude and capability that diffuses beyond the founding team to all members of an organization. Most growing firms strive to infuse the culture of the entire company with the entrepreneurial spirit. For example, Thomas Edison created an enterprise that became General Electric; Steve Jobs and Steve Wozniak founded Apple Computer; and Jeff Bezos founded Amazon on a set of values that he himself follows. These entrepreneurs combined their knowledge of valuable new technologies with sound business practices to build important new enterprises that continued to maintain their entrepreneurial spirit for years after founding.

Members of an entrepreneurial team decide whether to act as entrepreneurs based on the seven factors listed in Table 1.7 [Gatewood, 2001]. Good entrepreneurs tend to seek independence, financial success, self-realization, validation of achievement, and innovation, while fulfilling leadership roles. At the same time, potential entrepreneurs evaluate the risk and work efforts associated with an opportunity and balance them with the benefits. Successful entrepreneurs can answer positively the five questions listed in Table 1.8 [Kuemmerle, 2002].

Context can have an important effect on whether or not someone becomes an entrepreneur [Sørenson, 2007]. For example, people whose colleagues are entrepreneurial are more likely to become entrepreneurs themselves [Stuart and Ding, 2009].

### TABLE 1.7 Factors people use to determine whether to act as entrepreneurs.

<table>
<thead>
<tr>
<th>Positive factors or benefits</th>
<th>Negative factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Independence: Freedom to adapt and use their own approach to work and flexibility of work, autonomy</td>
<td>▪ Risk: Potential for loss of income and wealth</td>
</tr>
<tr>
<td>▪ Financial success: Income, financial security</td>
<td>▪ Work effort and stress: Level of work effort required, long hours, constant anxiety</td>
</tr>
<tr>
<td>▪ Self-realization: Recognition, achievement, status</td>
<td></td>
</tr>
<tr>
<td>▪ Innovation: Creating something new</td>
<td></td>
</tr>
<tr>
<td>▪ Roles: Fulfilling family tradition, acting as leader</td>
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</tr>
</tbody>
</table>

### TABLE 1.8 Five questions for the potential entrepreneur.

<table>
<thead>
<tr>
<th>Positive factors or benefits</th>
<th>Negative factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Are you comfortable stretching the rules and questioning conventional wisdom?</td>
<td>▪ Are you willing and able to shift strategies quickly?</td>
</tr>
<tr>
<td>▪ Are you prepared to take on powerful competitors?</td>
<td>▪ Are you a good deal closer and decision maker?</td>
</tr>
<tr>
<td>▪ Do you have the perseverance to start small and grow slowly?</td>
<td></td>
</tr>
</tbody>
</table>
Similarly, younger and smaller organizations are more likely to spawn entrepreneurs [Dobrev and Barnett, 2005]. Work environments with an unfavorable innovation climate or a lack of technical-excellence incentives can positively influence the entrepreneurial intentions of skilled and ambitious employees through low job satisfaction [Lee et al., 2011]. Finally, environmental changes, such as an increase in the availability of venture capital financing, also affect the decision to become an entrepreneur [Hsu et al., 2007].

On an individual level, people act as self-employed entrepreneurs when that career path is felt to be better than employment by an existing firm. Consider the satisfaction (utility) derived from an employment arrangement shown in equation 1.1. A utility function, U, is [Douglas and Shepherd, 1999]:

\[ U = f(Y, I, W, R, O) \]  

(1.1)

where \( Y \) = income, \( I \) = independence, \( W \) = work effort, \( R \) = risk, and \( O \) = other working conditions. It may be assumed that income depends in turn on ability. People will have an incentive to be entrepreneurs when the most satisfaction (utility) is obtained from the entrepreneurial activity. In other words, entrepreneurship pays off due to higher expected income and independence when reasonable levels of risk and work efforts are required.

For new entrepreneurial activities, the results of the venture are less known, and expected returns, independence, work effort, and risk can only be estimated. Potential entrepreneurs must be careful to do an honest assessment of their motivation and skills [Wasserman, 2012]. Regrettably, many entrepreneurs overweigh the benefits of independence and income and underestimate the work effort required.

Based on the preceding utility function, we may postulate a utility index that we will call the Entrepreneurial Attractiveness (EA) index [Lévesque et al., 2002]. For each factor (\( Y, I, W, \) and \( R \)), we use a scale of 1 to 5 with 1 = low, \( 3 = \) medium, and 5 = high.

\[ EA = (Y + I) - (W + R) \]  

(1.2)

As a simple example, consider the straightforward alternatives for a successful marketing manager in the electronics industry. She can earn $60,000 annually in her existing job (\( Y \) in equation 1.2). However, she values the independence of the new venture highly (I). The work effort for the new venture is estimated to be the same as for her current work (W). However, the risk is higher for the new independent venture (R). The potential entrepreneur estimates that she can obtain the same income over the next two years, although she will need a four-month period with a lower income at the start. The entrepreneur can compare the two options across these dimensions as shown in Table 1.9. In this case, over the first two years, the benefits of the new venture are \( Y + I = 8 \), and the costs of the venture are \( W + R = 7 \). The benefits of the existing job are equal to 5, and the costs are 6. Therefore, the EA for the new venture is +1 and the EA for the existing job is −1. The new opportunity looks more favorable due to this entrepreneur’s desire for independence, and it warrants in-depth analysis.
To mitigate risks, many entrepreneurs transition slowly, retaining their wage jobs while entering into self-employment [Folta et al., 2010]. Entrepreneurs must be careful, however, to dedicate the necessary effort to a new venture. Technology startups are not lifestyle businesses that entrepreneurs can pursue with limited hours [Ogle, 2012]. If an idea is not attractive enough to pursue wholeheartedly, then it may not be a good opportunity for that entrepreneur.

In summary, entrepreneurs are multitalented individuals who leverage their capabilities and interests to pursue a particular opportunity, almost always with the help of a team.* The decision to pursue an entrepreneurial path and a particular opportunity is determined by weighing the benefits of independence and income against the work effort required and the risk of the venture. In Chapter 2, we learn how a potential entrepreneur can evaluate an idea to determine if it is an actual opportunity.

### 1.6 Spotlight on Facebook

Facebook is a social networking service that was founded in 2004. Harvard University student Mark Zuckerberg and several classmates started the service as an online student directory with photos and basic information. Zuckerberg was the lead founder and entrepreneur; he attracted other Harvard students to co-found and develop the website. In early 2004, Facebook expanded to Ivy League schools, Stanford, and many other universities, and later that year moved its base of operations to California. Facebook eventually made an initial public offering (IPO) of stock in May 2012 at a price of $38 per share, valuing the company at $104 billion. At the start of 2017, Facebook’s value had risen to almost $400 billion.

Though other social networks like Friendster and MySpace existed, Facebook overtook the market in 2008 and has retained dominance since then. Now Facebook is one of the most valuable companies in the world. Zuckerberg’s own growth as an entrepreneur is closely aligned with Facebook’s growth. From a 20-year-old computer science wizard to a seasoned CEO, Zuckerberg made critical decisions that established Facebook as a market leader. In the summer of

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* Throughout this book, the word *entrepreneur* will refer to an individual or a team of individuals.
2006, he declined a $1 billion Yahoo acquisition offer, and in 2008, he successfully recruited superstar executive Sheryl Sandberg to serve as Facebook’s COO.

1.7 Summary
Entrepreneurship is the process through which individuals and teams bring together the necessary resources to exploit opportunities and, in doing so, create wealth, social benefits, and prosperity.

The critical ideas of this chapter are:

- Entrepreneurs identify problems or needs and they execute upon solutions.
- Entrepreneurship is an engine of economic growth.
- Entrepreneurs use knowledge to create innovations and new firms.
- Positive entrepreneurship activity flows from a combination of entrepreneurial capital and intellectual capital that leads to productivity and prosperity.
- Entrepreneurs identify and develop opportunities, acquire resources, and start organizations.
- A person can learn to be an entrepreneur.

### Principle 1

Entrepreneurs develop enterprises with the purpose of creating prosperity and wealth for all participants—investors, customers, suppliers, employees, and themselves—using a combination of intellectual capital and entrepreneurial processes.

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### Video Resources

Visit [http://techventures.stanford.edu](http://techventures.stanford.edu) to view experts discussing content from this chapter.

<table>
<thead>
<tr>
<th>Video Title</th>
<th>Speaker</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Skills Learned</td>
<td>Mark Zuckerberg</td>
<td>Facebook</td>
</tr>
<tr>
<td>Reasons Not to Be an Entrepreneur</td>
<td>Phil Libin</td>
<td>Evernote &amp; General Catalyst</td>
</tr>
<tr>
<td>Being Entrepreneurial in a Big Company</td>
<td>Shah Selbe</td>
<td>National Geographic</td>
</tr>
</tbody>
</table>

### 1.8 Exercises

1.1 What is the difference between an idea and an opportunity? Why is this difference important to entrepreneurs?

1.2 Consider opportunities that have occurred to you over the past month and list them in a column. Then, describe your strong interests and passions, and list them in a second column. Finally, create a list of your capabilities in a third column. Is there a natural match of opportunity, interests, and capabilities? If so, does this opportunity appear to offer a
good chance to build an enterprise? What would you need to do to make this opportunity an attractive chance to build an enterprise business?

1.3 Name an entrepreneur that you personally admire. Why do you consider this person to be an entrepreneur? What sets him or her apart from other business leaders? What path did this person take to entrepreneurship? What personal sacrifices or investments did this person make in the journey? What people were important to this person’s success?

1.4 Name a successful entrepreneurial team you personally admire. How would you classify it in the context of the entrepreneur capabilities shown in Table 1.5? Do these elements of entrepreneurship apply to it?

1.5 Research the number of companies that either had an IPO (initial public offering) or have been acquired in the last five years. What industries were these companies in? Where is the number of IPOs vs. M&As (mergers and acquisitions) trend leading? What implications does this have on the number of new ventures being started?

1.6 Given an understanding of the waves of innovation throughout history (Figure 1.5), explore opportunities that are created in a wave after the peak. For example, how can an entrepreneur take advantage of a mature or declining market?

VENTURE CHALLENGE

Select a high-potential opportunity that interests you and then use it for the venture challenge exercises at the end of each chapter.

1. Describe the opportunity that attracts you and why you think it is a new venture opportunity.

2. Describe the competencies and skills you and your team members possess.

3. What important stakeholders will you need to be successful?

4. Describe the passion and commitment you have for the opportunity.

5. Is this a good opportunity for you?