CHAPTER 1

Technology Entrepreneurship Today: Trends, Opportunities, Challenges

HIKE LEVERAGES LOCAL MARKET KNOWLEDGE TO SUCCEED IN INDIA

In just its fourth month since its launch, Indian startup Hike, a mobile messaging app, had more than five million registered users who exchanged over one billion messages per month. The app allows users to send free SMS messages, even to contacts that do not have Hike on their mobile phones. Users can also share location information, photos, and videos. Of course, compared to some more established firms like WhatsApp, which have more than 200 million active users and 600 billion messages per month, Hike seems like a small player. But Hike is using its knowledge of the Indian market to develop features that serve the unique needs of the Indian user.

For example, Hike has developed a patent-pending SMS conversion tool into its app to manage the fragmentation in the Indian market that has resulted in relatively low distribution of data-capable smart phones. If it was just a matter of incorporating SMS messages into a unified app, that has already been done by Google's Hangouts app. Instead, Hike focused on making sure data messages can reach users who don't have data via the SMS channel. This feature differentiates Hike nicely in its home market (about 60% of users are in India) and in other emerging markets like Indonesia and Malaysia.

Hike received about $7 million in funding from Japan-based Softbank in April 2013. The founders believe that their primary goal in the short term is to aggregate users and build a dominant position in India and other markets with similar telecom dynamics. They believe that their main source of revenue will come from content that is relevant to the local market, such as entertainment and games.

Hike founder Kavin Mittal explained why it is so important for his company to be located in India and serving the market there: "India is a country of 20 countries. There's so much diversity, cultural differences, dialects, languages that one has to cater to … There are about 150 million people that are experimenting with the Internet, but they have a lot of churn because the Internet is still not a utility for these guys; and then you have a billion people at the bottom of the pyramid that have no clue what the Internet is. As you go further down in India, how do you tackle the one billion people? No one knows, but we're in India here, and we're the guys to figure it out."

Sources: *Adapted from Natasha Lomas, "How Hike, India's Fastest Growing Mobile Messaging App is Banking on SMS & Local Diversity to Beat the Big Boys," TechCrunch.com, May 18, 2013; "Free Mobile Messaging App 'Hike' Crosses 5 Million Users," Hindu Times Business Line, April 21, 2013.*

1.1 INTRODUCTION

This chapter will provide you with insights into trends, challenges, and opportunities for today's technology entrepreneur. Much has changed since we wrote the first edition of this book in 2009, and we are excited to write about and reflect on these changes. We think this new book provides useful, practical, and impactful tools to help today's technology entrepreneurs turn their ideas into new products.

Recent and important new research into what is referred to as "entrepreneurial expertise" has revealed that successful technology entrepreneurs tend to launch new ventures only after taking thorough stock of the resources to which they have access and over which they have control. That is, seasoned technology entrepreneurs don't sit around dreaming about or endlessly investigating what venture to start. Instead, they tend to ask questions such as, "With the resources I currently control, people I know, and talents I possess, what type of business venture might I be able to create?" or, recognizing a need, want, or problem in the marketplace, "With the resources and talents I can bring to the table (my own or through other people I can bring into the venture), what type of business venture might I create to fill that need or want?"

Expert entrepreneurs begin their quest to launch a new venture by taking stock of who they are, what they know, who they know, and the resources they control, a process referred to as *effectuation*. This term is not just another bit of academic jargon. In fact, the term has some powerful and important operational components and meanings that aspiring and practicing technology entrepreneurs should learn. One of the more important discoveries made by effectuation researchers is the difference between "causal logic" (selecting between given means to achieve a predetermined goal) and "effectual logic" (imagining a possible new goal using a given set of means). This difference is depicted in Exhibit 1.1.

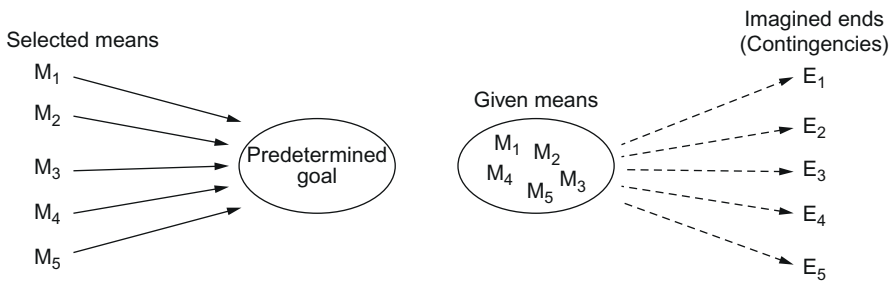

EXHIBIT 1.1
Causal versus effectual reasoning.

This figure is a useful illustration of the difference between the way problems are approached by most businesspeople (managers and business leaders) and the way they are approached by expert entrepreneurs. Most business people think in terms of setting a clear goal and then aggregating the resources necessary to pursue that singular goal, as illustrated on the left side of Exhibit 1.1. Indeed, the mark of an "expert manager" is the ability to set goals, persuade the organization to allocate the necessary resources, and then rally the troops to pursue the goal with single-mindedness and determination.

By way of contrast, the expert entrepreneur is aware that bringing new products to the market and building successful ventures is fraught with uncertainty. As we mentioned above, the expert entrepreneur begins the venture building process by taking stock of the resources available and currently controlled. This is illustrated on the right side of the diagram in Exhibit 1.1. This figure highlights the fact that expert entrepreneurs create value for target customers with the resources available to them and that any one of a number of different and varied "imagined ends" could count as a successful outcome. Clearly, this "entrepreneurial" way of creating value differs radically from the way corporate managers are trained to create value.

The experienced technology entrepreneur knows that customers may react in unexpected and unpredictable ways to the products they bring to the market. As such, the entrepreneur must approach the market with an open mind, a willingness to listen, and an ability to pivot to new business models and/or offerings as warranted by market response. One currently popular phrase that illustrates this perspective is: "No business plan survives first contact with the customer."[1]

A startup venture is not merely a "small" version of a large company. The startup is different from an established business in a number of important ways. For example, the startup venture has no customers. Thus, the startup cannot simply execute a proven business model because it hasn't yet determined which model will work best with its target customers. This contradicts a common understanding that entrepreneurship is all about execution. In fact, in the early days of a startup there is nothing really to execute because the entrepreneur has not yet found a way to consistently attract and deliver value to target customers. The goals of a startup are often different from those of an established business. For example, the immediate goal of a startup may be to become credible, show proof of customer demand, or market viability, as opposed to demonstrating sales and revenue.

The focus of the startup technology entrepreneur is to run experiments with products, features, and customers to *discover* a scalable, repeatable business model. The mantra for technology entrepreneurs during this startup phase

is: "Fail often, fail fast." In other words, run experiments that expose your products to the market, gather feedback, and refine your offering based on that feedback until you have a viable product that customers want to buy. We will explore the process of experimenting to find a business model in greater detail in Chapter 2.

The product that the startup brings to market in these early days is not necessarily its ultimate product, but rather what is referred to as the minimal viable product (MVP). The MVP is a product having only those features (1) necessary to get the product into the hands of early adopters and (2) sufficient to demonstrate future benefit. Successive versions of MVPs are introduced into the market to test fundamental business hypotheses as part of an iterative product development process.

One outcome of this fail often, fail fast revolution in technology startups is the advent of a new type of venture capital firm referred to as an accelerator. Ycombinator was one of the first of this new genre, which has now become global. An accelerator generally invests small amounts of capital—usually less than $50 K—in a large number of promising ideas and entrepreneurial teams. Typically, following the investment, the accelerator will require their portfolio companies to attend a venture development "boot camp" that builds the team and the product. For example, Kyron Global Accelerator, based in Bangalore, India, invests less than $20 K in startup technology ventures. Companies receiving investment must participate in Kyron's four-month boot camp at its Bangalore headquarters. There, teams interact with mentors, develop their products, and undertake a series of tasks designed to help the founding teams gain knowledge of their customers and their markets.

The concepts of "effectuation" and the "minimal viable product" are just two of the more important new ways of understanding how technology entrepreneurs should build successful ventures. We will be exploring these and other concepts in more detail in Chapter 2. Let's next turn our attention to some leading trends and challenges facing technology entrepreneurs.

1.2 TRENDS AND OPPORTUNITIES IN TECHNOLOGY ENTREPRENEURSHIP

As the story that opens this chapter indicates, technology entrepreneurs must think globally and act locally to succeed. Hike is a very young startup in India that built its core technology—an SMS messaging service—to serve the unique problems faced by Indians in the fragmented local telecom market. Although Hike was the beneficiary of a sizable $7 million early-stage investment, it will succeed or fail based on its ability to serve the massive opportunity that the Indian market presents. This is a fundamental lesson for all technology entrepreneurs.

Although big technology names dominate the media and have global presence, there is always room for innovation that creates value for local customers. Hike competes against some of the biggest names in the tech industry—Google, Facebook, and others—and yet it has achieved remarkably rapid growth because it addresses local issues that the big players have overlooked.

And so, despite the fact that markets are dominated by big companies in many technology industries, it is still a good time to be a technology entrepreneur. Disruptive innovations across the spectrum of technology industries are changing the way people interact, shop, vacation, work, and play. For example, some of the more powerful transformative Internet technology trends in recent years include:

- *Big Data*: Companies are benefiting from the troves of data they have been warehousing. Big data enables companies to track customer buying habits and make adjustments quickly if necessary. This has been described as "knowing the now." In other words, companies use big data not simply to understand what happened, but to know what is happening right now—in real time.[2]
- *The Quantified Self*: The quantified self is a function of numerous converging factors: aging Baby Boomers who want to maintain their youth and vitality into their senior years; the miniaturization of sensors and their ability to be embedded in the body and in exercise gear; and the ubiquitous presence of smart phones and apps that can communicate with the embedded sensors. Nike, for example, is sponsoring a technology accelerator in Beaverton, Oregon that develops companies whose technologies complement Nike's quantified self-innovations. The Nike+ website is a great example of how the company is recruiting developers to add value to its portfolio of athletic products.
- *Collaborative Commerce*: It was only a matter of time before entrepreneurs realized that people are becoming more comfortable sharing things via the Internet. What began as social networking and the sharing of personal information has now evolved to widespread sharing of nearly everything. For example, 99dresses.com allows people to sell old dresses for "buttons"—a form of online currency that allows them to buy more dresses from others. Or consider EatFeastly.com. This site enables people to prepare meals in their homes and then find others who are interested in paying for that meal and coming to their home to dine together.
- *Context Awareness*: The ever decreasing cost of embedding sensors and microchips in objects, people, pets, and so on, has opened up a new world of what is called "context awareness." People can now maintain e-connectivity with their possessions and loved ones via a network of embedded sensors and chips. Entrepreneurs are exploiting this explosion of e-connectivity by designing applications that keep track of children

or pets, monitor the home, and much more. Embedded sensors are also enabling a strong link between e-health and e-connectedness. Applications can now monitor key health indications in the elderly, for example, and provide immediate, real-time updates to caregivers and concerned loved ones.

- *Cloud Computing*: So-called cloud computing is the longest-running of the trends cited here. The notion that the "network is the computer" was put forward by Sun Microsystems's Scott McNealy as a founding motto of the company in 1985. Since then, cloud computing has become more important with increasing bandwidth, storage, and network speeds. Today, companies and consumers alike are comfortable with storing important information, pictures, and other digital content in the cloud. Startups such as Box.com and Dropbox are examples of companies that enable people to store digital assets in the cloud. In fact, Dropbox was an early graduate of a Ycombinator cohort and has since grown into a massive online storage and interaction platform.
- *Internet of Things*: This emerging category builds on some of the technologies listed above, but is not necessarily human-centric. That is, the embedded sensors that enable people to keep track of home appliances, children, pets, and other things also enable nonsentient "things" to talk to and keep track of one another. For example, the coffeemaker could tell the toaster when the coffee is ready, cuing the toaster to warm up the breakfast roll. When appliances talk to one another, the home owner doesn't need to attempt to calibrate the timing on each appliance so that he or she can enjoy hot coffee and a warm roll at the same time. The Internet of things would manage that process without the home owner needing to be involved. Of course, this is a banal application of what certainly will be a revolutionary change in how people and their "things" are oriented to one another.

The items listed above are only a few of the technology innovations that are proving disruptive to the status quo. There are important technological advances occurring beyond the realm of the Internet that will have profound implications for people around the world in the decades to come. Some of the more important of these innovations that are emerging as this chapter is being written include:

- Bitcoin and the advent of new digital currencies
- E-medical records and the advent of major changes in health care provision
- Cyber security and the need to ensure the integrity of data and transactions
- Nano-technology breakthroughs in medicine and other areas

- Health informatics and the ability to analyze massive amounts of health data
- Aging research that portends lengthened life spans
- Robotics and the increasing role of robots in the workplace and the home
- Brain science advances that will alter mental health care

Technology entrepreneurs will continue to drive the global economy and disrupt industries that are not evolving quickly enough to serve changing markets. The role of innovation in technology entrepreneurship cannot be underestimated. **Innovation** is defined in this book as the transformation of new ideas, inventions, and processes into value for a market. This definition makes it clear that innovation is different from merely having an idea or creating an invention. Good ideas can come from anyone. You've probably had ideas that you believed were breakthrough ideas and would be incredibly useful if they became reality. For example, it may be a good idea for electric vehicles to become more ubiquitous and affordable. However, as an *idea* there is no impact on society. It is the *innovator* who takes an idea and devises a way to create value with the idea via a product or service. The *entrepreneur* is the one who knows how to take the innovation to the marketplace. In graphic form, these distinctions are presented in Exhibit 1.2.

As you can see, innovators are people who take ideas and attempt to create value through product development, designing, iterating, and refining. Innovators often are also entrepreneurs, meaning those people who also understand how to organize a startup venture, develop a business model around the innovation, serve customers, and grow the venture. The innovator is not always a skilled entrepreneur, yet innovation and entrepreneurship are inseparable. The entrepreneur without the innovator has no value to bring to

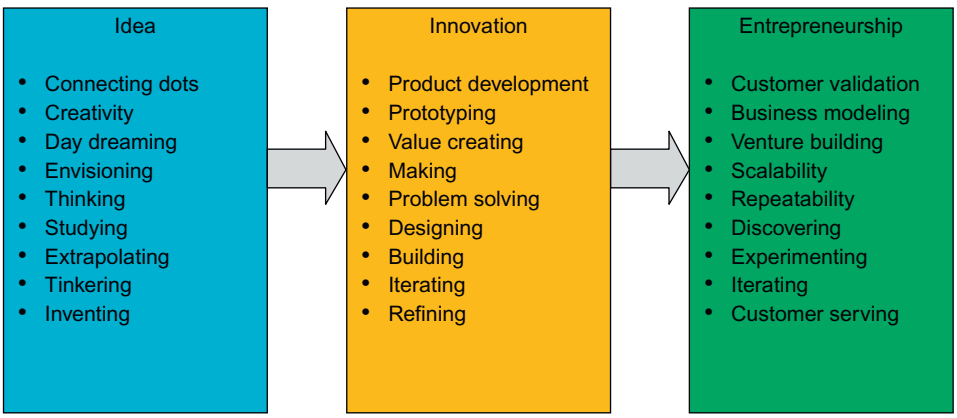

EXHIBIT 1.2
Distinguishing ideas, innovation, and entrepreneurship.

the market, and the innovator without the entrepreneur has value but doesn't possess the skills to serve markets and build a venture. However, it is not necessary that a single individual possess all of the skills necessary for success when starting a venture. Building a technology venture is a team sport, which will be discussed in more detail in Chapter 6.

The Mini-Case below is an example of someone who possesses all three of the key abilities noted above. Loren Brichter is an idea person, innovator, and successful entrepreneur.

MINI-CASE

Loren Brichter on Developing Popular Apps

Tweetie founder Loren Brichter says that he discards about 80% of his ideas to focus on those that he thinks will become "sticky" for users. Tweetie is the popular Twitter app that became a standard for mobile device users. He has since gone on to create a new app called "LetterPress," a multiplayer word game that prompts players to make words from a five-by-five grid of letters. There are several tips that aspiring app developer entrepreneurs should use to come up with products that users will desire:

1. Narrow your idea to something genuinely useful.
2. Build features that provide feedback to users so that they know what is happening.
3. Test your app wisely before releasing it to the marketplace.
4. Cross promoting your app with other popular apps is a good way to build market buzz.

Sources: *Jessica E. Lessin, "Experts Share Their Dos and Don'ts for Building an App,"* The Wall Street Journal, *March 4, 2013, p. B7; Seth Fiegerman, "Tweetie Creator Loren Brichter Discusses His Long-Awaited Follow-Up,"* Mashable, *October 24, 2012.*

When you are studying the material in this book, think about your own capacities as an idea person, an innovator, and an entrepreneur. It's possible that you possess all three skill sets like Loren Brichter does. However, you may be more of an innovator than an entrepreneur, or vice versa. Knowing yourself is a key starting point in the effectual approach to technology entrepreneurship. After all, two of the key resources that you always possess are your own unique talents and your skill sets. Knowing your personal strengths and weaknesses enables you to focus on what you do best and to find the talented people who can compensate for any of your weaknesses. For example, if you are a strong innovator but a weak entrepreneur, then you will need to find someone who possesses the skills of the entrepreneur. Likewise, skilled entrepreneurs who are not good innovators must find an innovation or an innovator around which to build a venture. By far the most likely scenario is that you'll need to work with other talented people to realize your technology venture dreams. It is rare to have all the talents and resources necessary to launch, grow, and exit a venture alone.

Technology entrepreneurship is truly a team sport that leverages the talents and contributions of multiple individuals striving together to reach the singular goal of venture success.

1.3 A WORD ABOUT GLOBAL MARKETS

All technology entrepreneurship today is global in nature. Innovation, competition, and disruptive technologies can emerge anywhere on the globe and rapidly disseminate to markets around the world. These technologies are in part driven by the Internet, which has not only enabled people to connect easily via the World Wide Web, but has also enabled rapid dissemination of knowledge and information. As a result, it is exceedingly difficult for innovators to build something that is not also being built somewhere else in the world.

The pressure on technology entrepreneurs to move quickly from innovation to market development is greater than ever. Technology entrepreneurs must develop their markets while iterating through multiple releases of their products, and during this process, their products are exposed to the global marketplace and the prying eyes of other ambitious entrepreneurs. This cannot be helped. Technology entrepreneurs cannot build their products in a vacuum (the proverbial "garage"), but must be willing to iterate through these product releases in the interest of rapidly developing their customers and their markets.

Of course, intellectual property will play a role in protecting the interests of technology entrepreneurs and their investors. One challenge technology entrepreneurs inevitably face is whether to spend more of their precious resources (and in particular, cash) on intellectual property development or on market development. Immediate needs inevitably clash with the need to lay a foundation for the future. The need to lay a foundation for intellectual property protection is discussed in Chapter 5. The priorities chosen and the path taken to solve this type of problem will vary depending on what type of technology venture is involved. For example, in many cases, entrepreneurs pursuing some type of Internet venture will likely want to spend more of their limited cash resources on market development. In contrast, a technology entrepreneur developing a medical device may want to spend more cash on intellectual property development.

It is important to realize that all global markets inevitably are local, and technology entrepreneurs who aspire to reach global markets with their products will need to take local customer needs and desires into consideration. Technology products that are created to serve markets in the United States, for example, may not be a good fit for markets in, say, India without significant modification. India is a unique and attractive market because it has an emerging middle class, is the second most populous nation on earth, and is technology savvy. However,

Internet entrepreneurs must realize that the World Wide Web is available only to 10% of the Indian population.[3] Yet, India currently has more than 900 million telephone subscribers, 96% of whom are on mobile phones. Mobile phones are used by 75% of the Indian population.[4] Internet entrepreneurs who want to develop a presence in the Indian market must tailor their offerings to take advantage of the extensive mobile phone penetration there. Offering a web-only solution to the India market right now will not be as potentially lucrative as offering a phone-based solution.

1.4 FOUNDATIONS OF THIS BOOK

This book is written for anyone who aspires to take a technology from idea to the market. We decided to write a practical guide for those intrepid souls who desire to be their own boss, build their own business ventures, and create value for global customers through technology. As such, this book is not for the faint-of-heart. Building a technology venture from scratch for the first time is daunting, stressful, and physically and psychologically taxing—and perhaps the most exciting thing you'll ever do in your life.

We have attempted to create a practical guide that any first-time entrepreneur will find useful and easy to read and, at the same time, a book that will be helpful also to serial technology entrepreneurs (those who may be on their second, third, or fourth venture). We have written this book with three primary objectives that we used to guide us:

1. *Rules and Principles*: We have attempted to incorporate the most important time-tested rules and principles for technology venture success. Even though no two ventures will be alike, there are rules and principles that apply across every venture and we've tried to highlight the important ones throughout this book. For example, new ventures are often challenged by cash flow issues, and the savvy entrepreneur quickly learns to track and manage cash. Because each of the three authors of this text is also a successful entrepreneur, we will relate the rules and principles that we've followed in our own ventures.
2. *Global Focus*: Our global economy is changing rapidly, and technology trends and opportunities are also changing. Any book is written and released at a single point in time. To avoid becoming obsolete before publication, we have integrated discussions of emerging, tracked trends throughout this book. We believe that successful technology entrepreneurs follow a general principle summarized by hockey legend Wayne Gretzky: "skate to where the puck is going," not to where it is. It is important for aspiring technology entrepreneurs to be in tune with the trends that are in place now so that they are able to seize the opportunities these trends will create in the future.

3. *Research and Theory*: The word "theory" is anathema to many practicing entrepreneurs. That's unfortunate because, in truth, we all operate in a world of theory all the time. That is, our theories about how the world works and our role in it define all of our actions and responses to the actions of others. We confine our discussions of theory to what we believe are the most important and revealing research topics emerging from top entrepreneurship scholars and practitioners. We have also been careful to translate theory into practical implications for practicing entrepreneurs.

The first section of this book is titled "You Are Here X." Literally, it means that you have to start your entrepreneurial journey where you are. Refer back to Exhibit 1.2, where we highlighted the distinction between causal logic and effectual logic. The expert technology entrepreneur doesn't wait for all the necessary resources to be in place before creating the venture and pursuing economic opportunity. Instead, the expert technology entrepreneur starts right here, at "X," and proceeds to create value.

This book is based on the model shown in Exhibit 1.3 below. This model mirrors the steps that technology entrepreneurs take to bring their products to the global marketplace.

1.5 CHAPTER SUMMARY

This chapter was designed to provide insights into the structure and underlying philosophies of this book, and to help the reader gain a basic understanding of the steps involved in building a successful venture. We introduced the concept of "effectuation" and the notion that successful entrepreneurs begin their ventures by assessing the resources they currently control; that is, rather than waiting for all the appropriate pieces to come together—which may never happen—expert entrepreneurs push forward with the resources they control and attempt to create value for chosen markets.

We also reviewed some of the top trends emerging in technology entrepreneurship on a global scale. The trends we identified are evolving rapidly as this book goes to press and likely will continue to change while new trends also emerge. The point is to alert aspiring entrepreneurs to the fluid nature of opportunity and the need to take effectual action as soon as possible and get to market quickly.

Global markets have become accessible to nearly anyone, anywhere on the planet. As such, the nature of competition has changed dramatically from just a quarter of a century ago. Global brands can emerge overnight on the Internet, and technology entrepreneurs must be alert and build unique advantages

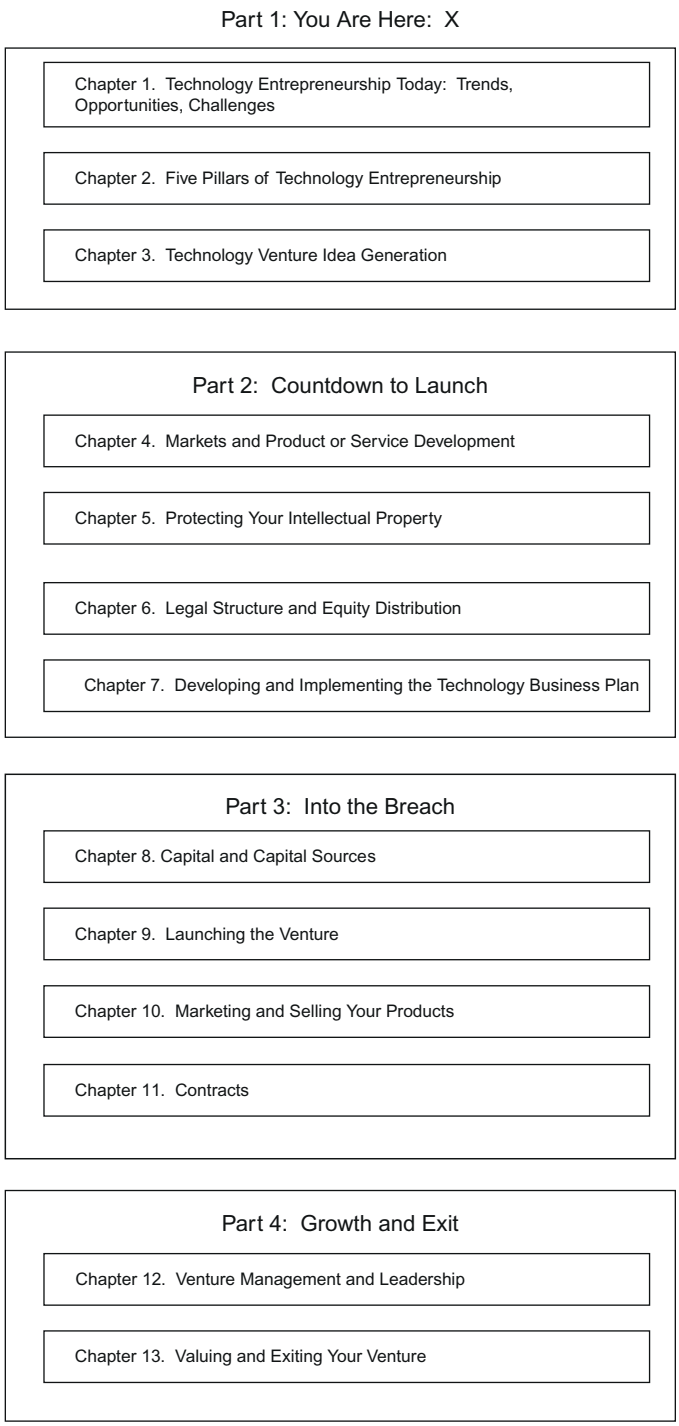

EXHIBIT 1.3
The structure of this book.

into their offerings. For example, it was highlighted that global brands can be beaten competitively by entrepreneurs who know the local market better than the global brand. Local nuances that are poorly served by a one-size-fits-all global brand can be a potent and sustainable form of competitive advantage to local firms that address those nuances.

Finally, we provided the reader with the basic information that should provide insight into the intellectual foundations of this book. This is a practical guide to technology entrepreneurship that draws inspiration from the personal experiences of the authors and other practicing and successful entrepreneurs. We also draw from the global pool of successful entrepreneurs to build awareness of the many different ways entrepreneurs around the world are writing their own success stories, and we draw inspiration from the tremendous research that continues to discover new insights into what makes successful entrepreneurs tick and how they build successful companies.

In Chapter 2, we will explore what we call the five pillars of technology entrepreneurship:

1. Value Creation
2. The Lean Startup
3. Customer Development & Validation
4. The Entrepreneurial Method
5. The Business Model Canvas

These five pillars are based on both the emerging research and on what successful technology entrepreneurs actually do to build successful ventures.

KEYTERMS

Effectuation The process of beginning a new venture by taking stock of who you are, what you know, and the resources you control.

Minimal viable product A version of an ultimate final product that is introduced to the market as an experiment to test market reaction and gather feedback for future iterations of the product.

Accelerator A new genre of venture capital firm that invests small amounts of capital into a large number of ventures.

Innovation The transformation of new ideas, inventions, and processes into value for a market.

ADDITIONAL READING

Feld, B., Cohen, D., 2010. Do More Faster: TechStars Lessons to Accelerate Your Startup. John Wiley and Sons, Hoboken, NJ.

Sarasvathy, SD., 2009. Effectuation: Elements of Entrepreneurial Expertise. Edward Elgar Publishing, Northhampton, MA.

Duening, T., Stock, G., 2012 The Entrepreneurial Method. Kendall-Hunt Publishing, Dubuque, IA.

WEB RESOURCES

Effectuation.org: This is the website of the Effectuation Society, a worldwide group of scholars who are exploring how expert entrepreneurs actually achieve their success and how those discoveries can be translated for the next generation of entrepreneurs.

TechCrunch.com: TechCrunch is an excellent online resource for tracking emerging and prevailing trends in technology entrepreneurship. The site reports on new companies, the entrepreneurs behind them, and the investors who back them.

Ycombinator.com: As discussed in the chapter, Ycombinator is one of a new breed of venture capital firms called "accelerators." This website will introduce this new style of venture investing and provide examples of the types of ventures in which they invest.

ENDNOTES

1 S. Blank and B. Dorf. 2012. The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company (Pescadero, CA: K&S Ranch Press).

2 Belicove, M.A. "Discovering Buried Treasure". *Entrepreneur*, May 2013, p. 40.

3 "Indian Technology Firms: Looking for India's Zuckerberg". *The Economist*, March 16, 2013.

4 Chotiner, I. "When a Subcontinent Goes Cellular". *The Wall Street Journal*, April 12, 2013.