1 Introduction

WHAT IS INNOVATION?

Impactful problem-solving. Individually, corporately, and society-wide we face increasingly critical and complex problems. We long for new solutions that will generate meaningful and lasting positive change – not just solutions that are new or creative, but those that are impactful. While there are many definitions of "innovation" (Schaver, 2014) – the word is unfortunately on the brink of becoming a meaningless buzzword – the definition used throughout this book is impactful problem-solving that leverages a product or service or approach that is new, or at least perceived as new by the adopter (Anthony, 2012).

An innovation must solve a problem for someone. People, individually or organizationally, have problems. There is no problem without someone who is suffering from it. It is similar to a tree falling in the woods. If a tree falls in the empty woods, will it be heard? No. The falling tree will certainly produce sound waves, but there needs to be someone or something there for the sound to be "heard." Problems are analogous. Without people (individuals, groups, or organizations) who are directly or indirectly affected by a problem, then there really is no issue that needs to be resolved. For a solution to be impactful, it must both address a real problem and be adopted by the person, individually or corporately, who has the problem. That adoption could be widespread, as in the global adoption of smart phones, or that adoption could be narrow, as when our friend adopts our innovative solution to their relationship issue. No adoption, no impact. No impact, no innovation.

Innovation is therefore, by its very nature, outward facing. It encompasses two separate points of view (POVs). One POV is that of the adopter. An innovation must align with the needs of an adopting

individual, group, or organization. The second POV is that of the creator of the innovation. That creator could be an individual, group, or organization. The two POVs could be one and the same if the innovation creator is creating a new solution to a problem of their own, but the two POVs are typically different.

By solving a problem for someone, an innovation creates impact. But impact can be measured in a number of different ways. For corporations, it may be measured in financial terms (reduced cost or increased profits) or in market terms (increased sales or market share). In government, the impact may be raising constituents above the poverty line or increasing their satisfaction index. In our personal lives, impact may be having a stronger relationship with our loved ones or a more satisfying career. It is not important *how* the impact is measured; what is important is that there *is* an impact.

An innovation must be new. However, an innovation does not necessarily need to be "a-brand-new-concept-to-the-universe" new, but rather it must be perceived as new by the adopter (Rogers, 1995). Indeed many innovations take something that is known in one field and apply it to another. Henry Ford's (2013) automobile manufacturing assembly line had its roots in the slaughter houses of Chicago. But the application of the automated "disassembly" processes ("Assembly," n.d.) was new to the manufacturing of goods like automobiles. While the concept of an assembly line was not a "brand new" concept, its application to the problem of automobile manufacturing certainly was new and impactful, and therefore an innovation.

Innovation is not an invention or a discovery. An invention is typically something that is novel, useful, and nonobvious. Flash memory was an invention. An invention can become an innovation, but only when it is adopted. Flash memory's use in digital cameras, for example, is an innovation. Similarly, discovery is also not an innovation, although it could certainly lead to one. A discovery is typically insight into how things work. Electrons flow freely down a copper wire. OK, so what? But that insight can be leveraged into something that is adopted to solve a problem – electric lights.

Innovation is not entrepreneurship. An innovation creates value for the adopter by solving a specific problem for them. That's half the entrepreneurship equation of creating and capturing value (Faley, 2015a). Thought of in this way, innovation is part of the continuum of entrepreneurship. Put another way, as Peter Drucker (1985) stated it, innovation is a tool of entrepreneurship. The two are part of one value-creation/value-capture continuum, although entrepreneurship is often taught solely from a value-capture perspective. There can also be entrepreneurship without innovation and innovation without entrepreneurship. We can create and capture value for a customer without creating something new. A franchise business does that. That's entrepreneurship without innovation. Alternatively, we can innovatively solve a personal problem for a friend. The friend's adoption of our new alternative and the impact it has on our friend makes it an innovation. But there is no "value-capture" portion, so no "entrepreneurship." Figure 1.1 shows the overlap of the entrepreneurship and innovation. There is certainly overlap between the two, but not complete overlap.

Innovation is also not creativity. Similar to innovation being the tool of the entrepreneur, creativity is the tool of the innovator. Creative thinking is the catalyst of innovation (Foursight, n.d.). We can do something "creative" that solves no problem and has no impact. As a result, we can be creative and not innovative as innovation is focused on problem-solving. Even a creative new product or service idea is not an innovation because the idea alone does not solve a problem. That idea could certainly lead to an innovation, but it is not a complete innovation. That idea must target

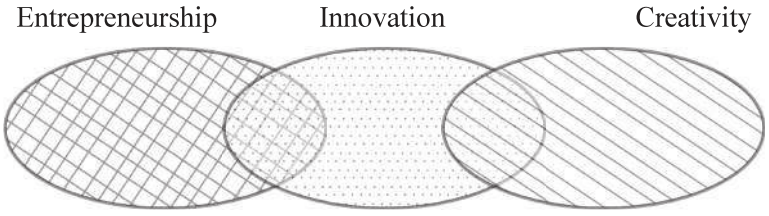

FIGURE 1.1 Creativity, innovation, and entrepreneurship continuum.

a specific problem. No problem, no adoption. No adoption, no impact. No impact, no innovation. The identification of the real, underlying problem that needs resolving is part of the innovation process, but not necessarily part of being creative. Then there is the execution side of innovation which is not part of creativity. For a solution to be adopted, it must exist and be available to the adopter. In other words, that innovation concept must be created and delivered to the adopter. Those actions are part of innovation, but not part of creativity. While there is significant overlap between the two, as Figure 1.1 illustrates, innovation and creativity do not completely overlap.

In short, innovation is impactful problem-solving that leverages something "new." Innovation overlaps with both creativity and entrepreneurship, but is not wholly either. The development of an innovation is a process of discovery; it is nonlinear, iterative, and knowledge-based. The Innovation Pyramid is a visual representation of a design thinking-based repeatable, learnable, nonlinear, iterative methodology that leverages the tools of creativity for its execution.

WHY IS INNOVATION IMPORTANT?

We need critical thinkers who can uncover the underlying root causes of our present situations amidst the vast noise of information that inundates us. We need these thinkers to analyze the facts in an objective manner so that a rational judgment can be reached (Schuster, 2018). And finally, we need them in all aspects of our life: in business, in government, in education, and in our personal lives. In short, we need impactful problem-solvers. We need innovators.

Impactful problem-solving – innovation – is necessary when stasis is no longer dominating or when incremental improvements on today's solutions will not get us where we want to be. We need new, impactful solutions that directly address today's problems, not simply polish yesterday's legacies. There are reasons the old solutions are not working today. The challenge is often not that the "solution" is outdated, but that the underlying cause of the problem has shifted. If the new underlying cause is not addressed, the desired impact will simply not be obtained.

For communities and individuals, innovation represents real change: not just window-dressing on old situations but something new that generates real, significant impact. The world is changing rapidly. We face, or will soon face – individually and corporately – new problems that will need data-supported solutions. We need a systematic way of approaching those problems, gathering the appropriate information, and creating those impactful solutions we long for.

While the need for innovations is in every aspect of our lives, the need is most easily measured in business. While we could certainly use innovations to address our personal issues, and on a larger scale, our societal issues, the corporate world needs them to survive. Innovation is consistently a top-five concern among CEOs according to TEC's Annual Global CEO Survey (TEC, 2018). Why?

> Effect of competition-driven markets is, over time, to commoditize any differentiation a company has and thereby diminish its ability to win customers and win capital and to win sales at attractive margins; to create attractive returns. The only way to respond to that is to continually to come up with new differentiation and to do that you have to innovate.
>
> Geoffrey Moore (2005), author of *Crossing the Chasm*

Peter Drucker (1985) puts it more succinctly. "Businesses must be able to innovate or else their competitors will render them obsolete."

Innovation determines the firm's ability to create future cash flows through new products, services, and ways of operating (business models). Future cash flows determine a firm's market value. It should be of no surprise then that a corporate CEO, whose variable pay is tied to the value of their firm's stock, is focused on innovation.

Given its importance to business, one would think that they would have the innovation process down to a science, but they are not even close. According to the NSF report, of all manufacturing firms only 23 percent have introduced new or significantly improved products/services between 2012 and 2014. It ranged from a high of 56.3 percent for communications equipment companies to a low of 10 percent for wood product firms (Kindlon, 2017).

The story is even worse for nonmanufacturing industries (i.e. services). Only 8.2 percent of firms have introduced new or significantly improved products or services during that period. Software firms led the way with 61.1 percent of firms introducing a new or significantly improved products or services during the 2012–2014 timeframe. The industry laggers were real estate or leasing firms at 4.7 percent.

While these numbers are dismal, the story is actually worse. There is "no correlation between the amount of money a company spends on research and development (R&D) and its overall financial results" (PWC, 2018). That strongly suggests that the conversion of discoveries and/or inventions to innovations is completely ad hoc at best. There appears to be no system for a firm – whose future is dependent on innovations – to become a serial innovator. Innovations occasionally occur, but randomly.

WHY IS IT SO DIFFICULT TO BE A SERIAL INNOVATOR?

Why is it so hard? Innovation requires three elements: people, place, process (Hasso, n.d.), or more generally, people, environment, and methodology.

People

There are actually two groups of people involved in generating impactful solutions: those creating the proposed innovation (the innovators) and those who have an issue they long to resolve (the adopters). While the innovator and adopter can be the same person, say if we are solving a problem for ourselves, would-be innovators too often project themselves as the "adopter" when they are not the ones suffering from the issue. Empathy is critical. The would-be innovator must have empathy for the adopter. The innovator must understand the would-be adopter's general issue and be able to drive that down to a specific need, want, or desire. That requires the innovator to see the world from the adopter's POV. The features of the innovator's proposed solution must align with the adopter's needs, wants, or desires. That requires that the innovator consider both what they can

create and how that creation will align with the adopter's needs. That, in turn, requires multiple POV shifts throughout the innovation's development. This alone would make innovating difficult; as F. Scott Fitzgerald puts it, "The test of a first-rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain the ability to function."

Unfortunately, while this duality of POVs is critical, the focus of innovation training is too often innovator-centric. While creating innovation teams with diverse thinking sets is absolutely necessary, it is simply not sufficient to become a repeatable innovator. "Putting the right people in a room" is not a replicable process. The method element is missing. If we wanted to build a house for someone and were going to put a group of people together that had never built a house before, it would make sense to get a diverse set of skills on the team: carpenters, plumbers, masons, electricians, etc. If the people are clever, they may eventually figure it out. The process would be neither efficient nor predictable, but they could accomplish the task sometimes. Sounds a bit like the noncorrelation between R&D spending and innovation, doesn't it?

Environment

The second piece of the innovation puzzle is the environment. There are actually two environments that matter: the environment of the innovators (often the environment inside the organization in which they work) and that of the potential adopters. For the innovator, knowing what to do and having the right people but not having a supportive environment will not lead to a positive result. "You cannot grow roses in concrete" (Munro, 2018). Let's say that we desire to drive from New York to California. We have a map and a car. We have people who know how to drive and can work together. What we do not have are the necessary fuel stations along the way, as our automobile operates on hydrogen. It is a nonsupportive environment for our trip. Some environments can be supportive, some neutral, while some are simply counterproductive to repetitive innovating. Does the culture

of the organization treat failure as a part of the learning process or as a career-ending event? The former is the bare minimum requirement for a supportive innovation-development environment, while the latter is a toxic environment for would-be innovators.

The would-be adopter's environment is also critical. There must be a pathway for the would-be adopter to obtain the proposed innovation. There is no innovation without adoption. If there are significant barriers that separate the target adopter from the would-be innovation, then there will be no adoption. This is true even if every other part of the innovation development was performed perfectly. The adopter-impacting environment ranges from local laws or customs that prohibit or discourage the adoption of the potential innovation to financial or physical access barriers to the would-be innovation.

Methodology

While the other two legs of the stool (people and environment) are definitely challenging, it is often the lack of a methodology that makes or breaks our ability to repeatedly create and deliver new impactful solutions. Figure 1.2 summarizes the impact of the lack of each of these elements on the desired outcome of creating an authentic innovation. Note that an inconsistent output is predicted by a lack of a repeatable methodology. That inconsistency sounds eerily familiar to the previously mentioned lack of a correlation between an organization's

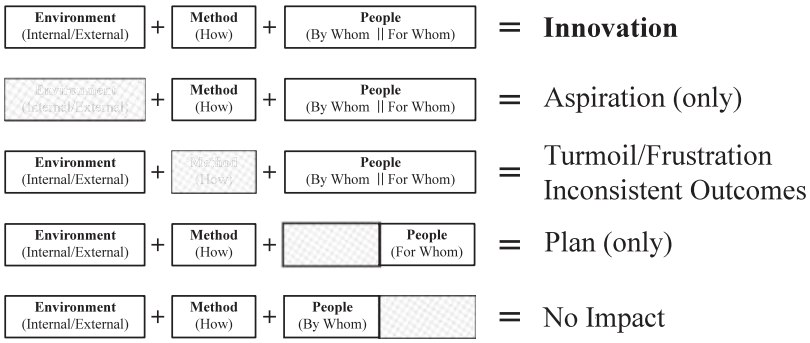

FIGURE 1.2 Impacts of missing key factors of innovation.

R&D spending and its ability to create innovations. Other common organizational outcomes are also identified in Figure 1.2.

A method is not a guarantee for reaching an impactful solution. If we correctly follow a recipe, we will end up with a predictable result. This not the case for a methodology, as will be further explained in Chapter 2. A methodology is a system of procedures and/or techniques that allow the accomplishment of a set of tasks without guarantee of a specific outcome. A repeatable method controls a number of innovation-project variables, but not all of them. Those variables not controlled for will require our judgment. Judgment remains an important element in innovation development. Repeatable use of a consistent method provides a means to improve our judgment and therefore improve on our ability to become serial innovators.

The focus of this book is describing a learnable, repeatable, nonlinear, iterative, knowledge-based methodology for generating innovations. The method's description will seem foreign to some and obvious to others. Naturally gifted serial innovators operate on instinct. They just "know" things should be done a certain way and a certain order. They are very intuitive. That's great. For them. Some do not even realize they are following a methodology, but they are. They may even argue that it cannot be "taught" as they are "born" with this ability. That is simply not true; any method, once identified, can be codified and learned. The methodology described in this book is a codification of methods practiced by successful intuitives. The method presented is certainly not the only viable method, but it is one that works.

The design thinking-based Innovation Pyramid, which is detailed in Part I of this book, describes this needed overarching guide. This part presents the macro-level view of innovation development. Those that prefer to learn from the general-to-specific should begin reading here. The second section of the book (Part II) details the creativity-based Diverge–Organize–Converge (DOC) Process essential to implementing The Pyramid methodology. This is the micro-level view. Those that prefer to learn from specific-to-general could read this part first, and then read Part I. The order of the reading

does not matter. The Innovation Pyramid can be thought of as the assembly instructions while the DOC Process provides the toolset necessary to perform the assembly. Together they create a learnable, implementable, repeatable means for developing true innovations. Innovations that will generate real, positive impact.

UNIQUE ASPECTS OF THE INNOVATION PYRAMID METHODOLOGY

The Innovation Pyramid book differentiates itself from other offerings on innovation in several distinct ways. First and foremost, this book is focused on a methodology for innovating. Most other books on innovation target the people side of innovation. They either focus on assembling an innovation team with the right combination of innate abilities or they focus on developing an individual's creativity skillset.

The Innovation Pyramid is a visual representation of a strategic approach for developing impactful solutions to real problems, or in other words, to create innovations. The user-centric, design thinking-based Innovation Pyramid is a physical representation of a repeatable overarching guide, or roadmap for producing innovations. The overarching methodology is articulated in Part I of this book. The methodology leverages the creativity-based DOC Process detailed in Part II of this book. The DOC Process can be used on its own to improve our problem-solving ability, but more importantly, is essential to reducing The Innovation Pyramid to practice. Think of the DOC Process as a set of tools that helps us implement the overarching methodology, similar to a wrench set being the specific tools which allow us to rebuild an engine. The tools alone are not enough. Simply having a set of tools, and having no other knowledge about engine reconstruction, would not allow us to get the job done. On the other hand, if we had a step-by-step guide for rebuilding an engine, but had no tools or understanding of their use, then that guide would be nothing more than a theoretical construct. Together the two parts get us there. The Innovation Pyramid is the overarching pathway for developing an innovation and the DOC Process provides the means to transform that construct into reality. The book can