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Review Article

How Do We Define Success with the Lean Startup?

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Abstract

Most management discussions pose a fundamental question in determining the viability of a strategy— does it translate to success? Such a question applies to the lean startup phenomenon, a popular entrepreneurship strategy that embraces a scientific, hypothesis-driven approach to identify and validate scalable products and business models. There are many different definitions of success and similarly for that associated with the lean startup. This paper aims to (1) provide a contextual discussion around the success questions related to the lean startup and (2) open a dialogue that will lead to collaborative research efforts. It summarizes nascent empiric literature related to lean startup (and associated concepts) with success and finds nine relevant contributions, of which one fulfills the standard of rigor. This narrative includes a broad review of the organizational learning, business model (business model innovation), and the lean startup literature streams. This effort leads to three thematic areas that help to identify gaps and provocative questions to explore. Such research leads to an overarching question and several secondary inquiries to guide further literature review and proposition and hypothesis development. In closing, this narrative posits two study ideas based on: (1) an organizational learning (and utilizing Crosan's framework for organizational renewal) lens leading to two qualitative-oriented questions; and (2) organizational learning and performance management lenses steering several quantitative queries and an input-output model to investigate the relationships.

Keywords: Business Model Canvas; Business Model Innovation; Customer Discovery; Entrepreneurial Legitimization; Entrepreneurial Literature Review; Entrepreneurial Success; Entrepreneurial Performance; Entrepreneurial Research; Hypothesis-driven Entrepreneurship; Lean Start-up (Lean Startup); Organization Learning; Performance Assessment

Introduction

The Cranfield School of Management encourages its doctoral students to engage their professional communities to obtain feedback on the topics that they are investigating. Most management discussions pose a fundamental question in determining the viability of a strategy— does it translate to success? Such applies to the lean startup. In this case, this essay takes the question one step further— how do we define success with the lean startup phenomenon?

In taking a step back and asking the question about success, one will find that most individuals will provide a different definition.

Usually, respondents will cite something related to financial, social, scholastic, health, and family. So, it depends. The Merriam-Webster's [1] dictionary definitions link success with positive connotations, including (1) favorable or desired outcome and (2) the attainment of wealth, favor, or eminence (fame, recognition). However, one could even look at failure as a success if it translates through learning to success. This point is why experimentation is essential. Hopefully, as in Silicon Valley, one fails fast [2].

To this end, this paper aims to fulfill two objectives- (1) to provide context around this question and (2) to open a conversation that will lead to collaborative research efforts to address the query. First, the narrative will introduce the phenomenon of the lean startup. Second, the discussion will highlight the question around success and examine the rationale for investigating this question, along with relevant literature. Third, it will highlight high-level findings related to the streams of literature for organizational learning, business model (and innovation), and the lean startup. Fourth, this discussion raises an overarching question along with

secondary refining questions to guide further literature review and proposition and hypothesis development. The paper closes with two study ideas to explore, along with relevant questions to define the direction of such investigations.

The Lean Startup Phenomena

The lean startup is a term Eric Reis coined through his blog and bestselling book, “The Lean Startup: How Today’s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses” [3]. It describes a hypothesis-driven process for developing successful new products and businesses. Entrepreneurs, schools of business, accelerators, and government programs (e.g., National Science Foundation Innovation CORPS™ [ICORPS™]), utilize this popular practitioner-developed framework as part of their entrepreneurship and commercialization training programs [4-8] Five principles define the lean startup: (1) entrepreneurs are ubiquitous; (2) entrepreneurship is management; (3) learning is validated; (4) build-measure-learn; and (5) innovation accounting [3]. These principles underlie the essential activities involves with this methodology [3,5,6].

To this end, the methodology entails several critical steps. First, it starts with an entrepreneurial vision, which translates into falsifiable hypotheses [3,6]. Second, the next piece, experimentation, is the defining element of the process [6]. Experimentation involves the testing of the set hypotheses using a “Build-Measure-Learn” (BML) cycle (Figure 1) [3]. This process uses a Minimum Viable Product (MVP) a “bare-bones” set of features and capabilities to measure market traction and drive one build-measure-learn cycle turn with minimal effort and development time [3]. The process employs metrics to evaluate the results of these tests [6]. Finally, there is the concept of validated learning in which the entrepreneur reflects on the results (confirmation or refutation of hypotheses) of one’s experiments [3,6]. The resultant actions (pivot, iterate, move forward, or exit) translates one’s learnings [3,5,6]. Iterations are minor changes, and pivots involve substantial corrections around the MVP and/or the business model [6].

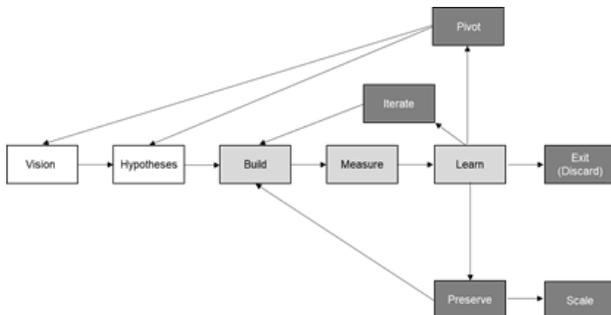


Figure 1: Lean Startups BML Cycle and Learning Actions (Light Gray BML, Dark Gray Resultant Learning Actions) (Adapted from Bortolini et al. [6,9].

Learning is essential to defining product/market fit (P/MF) [4]. There are two definitions for the concept. The first involves a representation of the right product for the market with a demonstrated early-adopter demand and attractive market potential or (2) a good market with a product that can satisfy the space, in a rapid, efficient, and cost-effective manner [4,6].

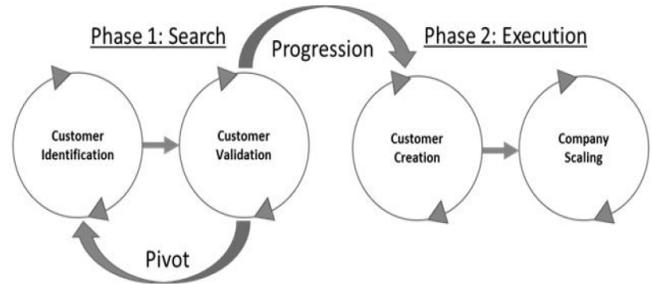


Figure 2: Blank’s Customer Discovery Search and Execution (Adapted from Blank by York; [4,10].

The lean startup process engages the customer discovery process (Figure 2) and a business model canvas (Figure 3) (or lean canvas) [4,7,11,12]. Customer discovery involves a search process that employs direct customer interviews to understand needs, the “job-to-do,” and to test hypotheses around business model assumptions using the canvas and the product via the MVP [4]. Further, this process uses the business model canvas (or lean canvas) to help validate assumptions around a business model that could be repeatable [4,11].

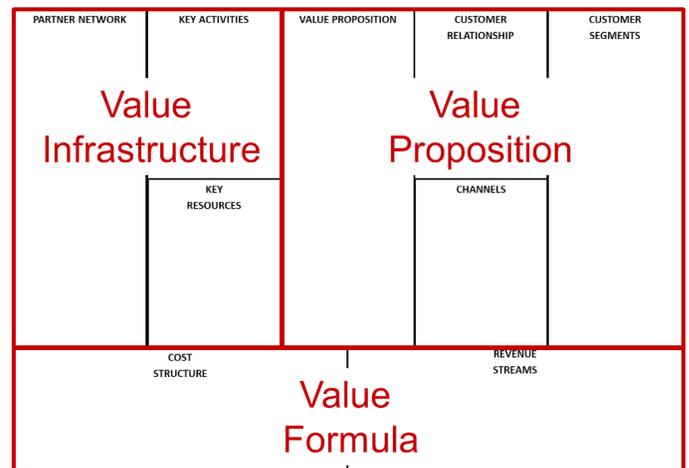


Figure 3: The Business Model Canvas (Adapted from Osterwalder and Pigneur by York [10,12].

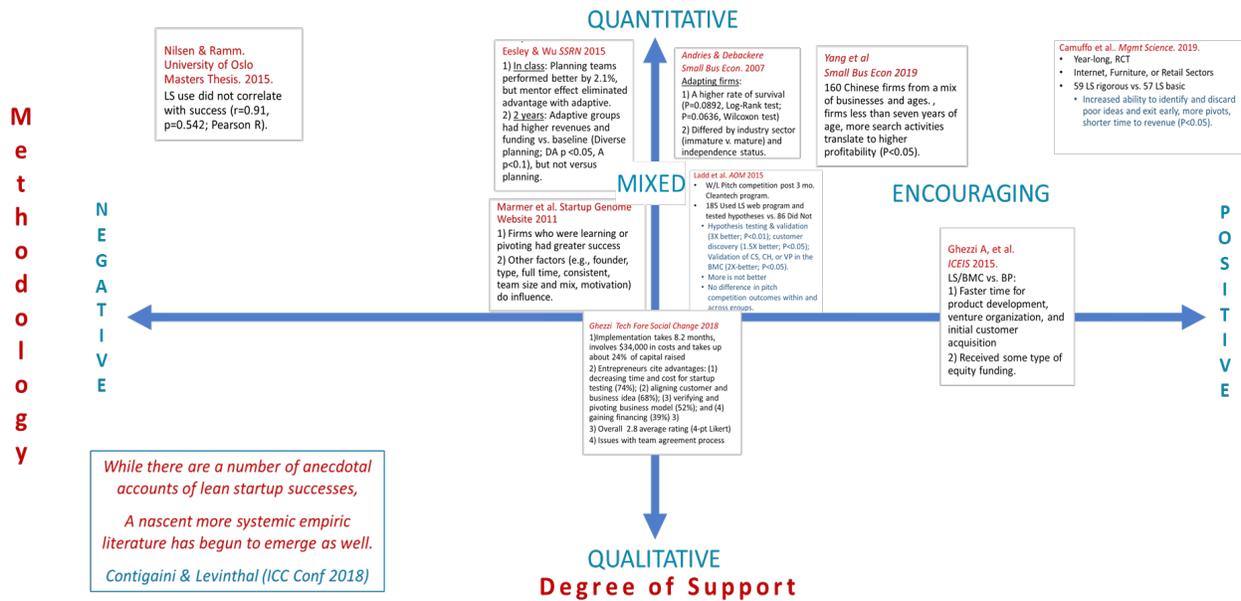


Figure 4: Analysis of Evidence Supporting Success with Lean Startup (Or Adaptive Strategy or Search Strategies).

The Overarching Question and Rationale

Hence, the questions to address include—does the lean startup translate to success, and how? If one examines some definitions of success with the lean startup, there are many. Examples include product/market fit (P/MF), saving time (and/or money), winning a “pitch,” gaining investment, revenue (and time too), survival, and growth [3,9,13-18]. Thus, there are multiple definitions. The point of our research is to dive into how to define it. Then, next is how to measure it. From an empirical standpoint, academics need to know that what they are doing in their educational efforts make a difference.

Why is this important? The lean startup became extremely popular this past decade. Many academics and practitioners been working with the lean startup for the last ten years in our classrooms, accelerators, and government programs, and even in big corporations such as General Electric [3,19,20]. Eric Ries’ book, “The Lean Startup: How Today’s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses,” sold over a million copies. Furthermore, Silicon Valley, the National Science Foundation Innovation CORPSTM program, the academia, and corporate entities have embraced the methodology [20].

Entrepreneurship involves multiple stakeholders— entrepreneurs, investors, educators, and funders. Many entrepreneurs devote significant time and resources to a new endeavor. They rely

on anecdotally-based narratives, such as the lean startup. Funders (e.g., US government) invest tens of millions into education without any significant findings that such efforts translate to commercial success.

Common for all stakeholders is whether the methodology influences commercial outcomes or new venture performance and, if so, what type. Also, all will benefit from understanding contextual factors (e.g., founder, team, intent, rigor, business vertical, and environment). The entrepreneur can appreciate whether and how to use it properly to improve the chances of success. The investor can “de-risk” one’s investments by identifying what data to seek from the entrepreneur. Public and private foundations investing in entrepreneurship training can determine what programs to support and what milestones to expect. Finally, educators can put the lean startup curricula into the perspective relative to other methods, teach students how to use it appropriately and rigorously, and emphasize the importance of achieving a tangible commercial outcome.

The challenge with the lean startup is that most of its published experience is anecdotal [20]. So, what about through the lens of scholarly empirical literature? Addressing this translation question with empiric data will provide insights based on data. This question led to a search through empirical literature using a broad definition for the lean startup, including adaptive (adaptive strategy) and search as well (Figure 4).

Overall, as Contigiani and Levinthal note, the lean startup literature is nascent concerning success and performance [21]. There is a limited mix of studies. They reflect a variety of methodologies and points, industries, firm types, and results quickly. Overall, the empirical literature proffers a mix of empiric experiences that fails to address the translation question equivocally.

In examining the nine studies culled from this search, there are some valuable learnings. First, five of these nine studies examined the lean startup. Second, three made some type of comparison, whether it is using a business plan or not using any. Third, for a population n of being over 100 teams, only two studies, Ladd et al. [16] and Camuffo et al. included this size in their populations samples [14]. Fourth, individual studies provide some empirical evidence to support or negate the premise [14]. Fifth, most of the evaluations offered mixed findings [15,16].

Finally, only one, Camuffo et al., involves a randomized control study consisting of 116 early-stage startups (internet, retail, and furniture sectors) [14]. The study reports that the treatment group (intensive hypothesis testing and follow up, $n=59$), versus the control arm (basic lean startup training, $n=57$), experiences significant increases in (1) “exists” (i.e., identifying and discarding poor ideas); (2) pivots; and (3) revenue ($P<0.05$) [14]. It also finds significant differences ($P<0.05$) favoring the intervention concerning time_to_acquisition (customer) ($P<0.1$), time_to_activation (customer) ($P<0.05$), and time_to_revenue [14]. The take-home point from this study is that using a rigorous implementation of the lean startup, versus more of an ad hoc usage of the methodology. As a result, other scholars cite this research as probably one of the most rigorous examples [22].

Literature Review

This work opened the exploration of the literature streams of organizational learning, business model/business model innovation, and lean startup (Figure 5), all of which comprise over 400 publications. Table 1 highlights essential observations see in each stream. Overall, there are three overarching themes. The first is that learning is a common thread running through these three streams. Of note are the roots that exist within the organizational learning literature and how they connect with both the business model innovation and the lean startup. Notable to entrepreneurship and lean startup are concepts, including single- and double-loop learning [23], exploration vs. exploitation [24,25], experimentation [25], Crossan’s 4Is framework (intuiting, interpreting, integrating, and

institutionalizing) [26,27], and business model innovation [28].

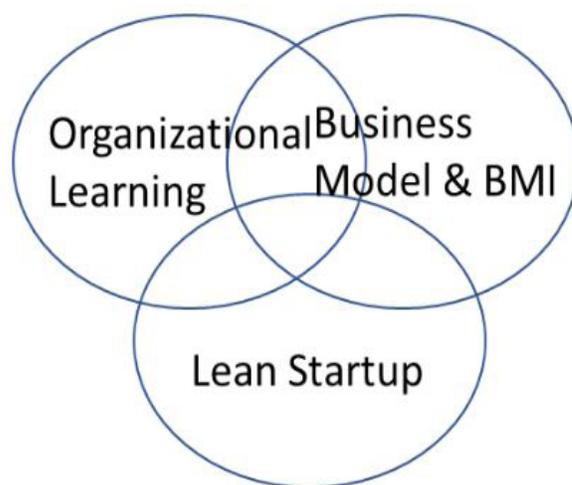


Figure 5: Streams of Literature Review.

The second emphasizes that individuals should not discount the business model and business model innovation [28,29]. These are critical pieces. An essential part of business model innovation is that of experimentation, a subprocess within organizational learning [30-32]. Further, experimentation is not just about learning, but also includes that of signaling and enactment, two processes needed for legitimization [32]. In ways, this process mimics that seen with Crossan’s 4Is framework and “feed-forward” and “feedback processes” [26,27].

The final point is that the lean startup conversation is evolving. It is a literature of approximately 300 peer review papers. Some of the exciting contributions around this literature occurred over the last few years, particularly since 2015. These additions include narratives that raise issues with the methodology and its implementation, boundary conditions related to the industry sector, that rigorous use makes a difference, and the success literature is nascent [21].

Thus, in reviewing these literature streams, there is an opportunity to make a unique contribution to the conversation, as gaps do appear. There are opportunities to engage in the “success” and “performance” discussions, mainly using the lens related to business model innovation and organizational learning by looking at outcomes with experimentation or the 4 is framework.

| Learning is a Common Thread | Business Model and Business Model Innovation Are Critical Pieces | The Lean Startup Conversation Is Evolving |
|---|--|--|
| <ul style="list-style-type: none"> Can apply org learning lens to entrepreneurship [1,2]. | <ul style="list-style-type: none"> Multiple definitions: Identify, create, deliver, and capture value [1]; Content, structure, governance [2]; independent system [3]; Unit of analysis [4]; The overarching framework of internal and external components [5]. | <ul style="list-style-type: none"> Theoretical, scientific foundation beginning to solidify [1-3]. |
| <ul style="list-style-type: none"> Experimentation, culture, and embracing failure [3-8]. | <ul style="list-style-type: none"> BMI: Experimentation, local vs distant search, reinvention [4-10]. | <ul style="list-style-type: none"> A mix of experiences globally [4-7]. |
| <ul style="list-style-type: none"> Theory-in-action/theory-in-use, single-loop, double-loop and validated learning [6,9,10]. | <ul style="list-style-type: none"> Multiple types of canvases-then BMC most common [11-15]. | <ul style="list-style-type: none"> Issues with interviewing, experimentation, MVP, BMC, team consensus, scaling [1,6-11]. |
| <ul style="list-style-type: none"> Exploration vs. exploitation [7,11]. | <ul style="list-style-type: none"> 55+ different models. Many can reinvent of the wheel [10,16]. | <ul style="list-style-type: none"> Boundaries, but ideal areas- low technological/high market uncertainty [12]. |
| <ul style="list-style-type: none"> 4Is and the legitimization process [2,12]. | <ul style="list-style-type: none"> The success of a business model- Teece's 7 Questions, P/MF [1,17]. | <ul style="list-style-type: none"> Rigorous use makes a difference to outcomes (discard, pivot, revenue) [13]. |
| <ul style="list-style-type: none"> Learning plays a role in the diffusion of innovation [13]. | | <ul style="list-style-type: none"> Success literature is nascent, but still limited and is still evolving [14,15]. |
| <ul style="list-style-type: none"> Learning part of the business model [14]. | | |
| <ul style="list-style-type: none"> Learning curve one key metric [15]. | | |
| <p>1. Lumpkin and Lichtenstein, 2005; 2. Dutta and Crossan, 2005; 3. Huber, 1991, 4. Thomke, 2001; 5. Thomke, 2020; 6. Ries, 2011; 7. March, 1991, 8. Cannon and Edmundson, 2005; 9. Argyris and Schon, 1978, 10. Mansoori, 2016, 11. Levinthal & Marsh <i>SMJ</i>, 1994, 12. Crossan, Lane, and White, 1999, 13. Rogers, Singhal, and Quinlan, 2019; 14. Itami and Nishino, 2010; 15. Argote, 2013</p> | <p>1. Teece, 2010; 2. Amit and Zott, 2001; 3. Zott and Amit, 2010; 4. Foss and Saebi, 2016; 5. Lecocq, Demil, and Ventura, 2010; 6. Levinthal and March, 1993; 7. McGrath, 2010; 8. Andries, Debackere, and van Looy, 2013; 9. Blank, 2005; 10. Ghezzi, 2017; 11. Osterwalder & Pigneur, 2010; 12. Maurya, 2012; 13. Iazzolino et al., 2019; 14. Felin et al., 2019; 15. Ghezzi, 2018; 16. Gassmann, Frankenberger, and Csik, 2014; 17. Mateu and March-Chorda, 2016</p> | <p>1. Ghezzi, 2018; 2. Bortolini et al., 2018b; 3. Frederiksen and Brem, 2017; 4. Racolta Paina, N., Andries, 2017; 5. Lalic, Calopa and Horvat, 2012; 6. Nirwan and Dhewanto, 2015; 7. Rao, 2014; 8. York and Danes, 2014; 9. Felin et al., 2019; 10. Ng, 2014; 11. York and York, 2019; 12. Harms, 2015; 13. Camuffo et al., 2019; 14. Contigiani and Levinthal, 2018b; 15. York, 2020</p> |

Table 1: Significant Themes and Insights from Review of Organizational Learning, Business Model (and Innovation), and Lean Startup

Defining Questions

Rigorous research needs to begin with some questions. For this initiative, it starts with an overarching question

- Does the lean startup translate to success?

Refining this broad question are questions that focus on the “how” aspect to define and evaluate “success”? To this end, there are several areas to hone this question into those that are more specific and defining. There are multiple ways that we can look at this problem and define the problem and measure it.

Literatures.

- First, what lens to use? Is it from the vantage point of the entrepreneur, organization, investor, or manager?
- The second emerges with what defines success. Is it performance, legitimacy, survival, entrepreneur’s experience, investor, or achievement of a milestone?
- The third relates to measurement. Is the appropriate endpoint product/market fit, investment, pivots, exits (i.e., discarding ideas), or winning a pitch competition in the short-term? Or is it more of new venture performance, a concept that relates to more traditional commercial and financial metrics, such revenue, customer acquisition, time to first customer, incorporation, growth, profit, exit (i.e., acquisition) or survival?

Both milestone areas could also consider time and cost-based endpoints, both of which would be consistent with the overall mission of lean. These pieces must tie together to define a direction to take with our research.

The fourth area concerns contextual factors. These include both internal factors (e.g., the entrepreneur and the team) and external factors.

- What is the impact of the entrepreneur’s orientation (and capabilities) and intent to use the methodology? What is the impact of the team, its experience, and make-up?
- Then, what about the influence of the environment, competition, the sector, and the presence of investment within the community?

Tied with this point are various boundary conditions, as the lean startup does not necessarily apply to all types of business sectors.

- What limits to consider including the business sector, technical/regulatory risk profile, time-horizon to market, and extent of capital needed?

Overall, there is a need to identify more “lean friendly” in quotes sectors.

The fifth and final question relates to setting to conduct the study.

- Where to explore the question?
- Is it in school, a co-working center, an incubator, or an accelerator?

The influence, motivation, and focus of participants in each of these sectors differ significantly and, thus, will influence the refinement of the research questions. Interestingly, the last three are of interest since they are practice-oriented settings.

Research Ideas and Questions

The final section of this paper discusses two brief ideas

related to how to define and measure success with the lean startup.

Idea 1: The first involves looking through the lens of organizational learning and the concept of innovation legitimacy. This idea builds on from the organizational learning literature, and Mary Crossan’s work, which involves the 4Is of organizational renewal– intuiting, interpreting, integrated, and institutionalization (Figure 6) [26,27]. These “feed-forward” from the individual to the group. When the organization buys into the ideas and creates knowledge, these then evolve to routines and practices [26,27]. These organizations or institutions, then “feedback” through the group and individual, as it firm exploits the knowledge it has embedded [26,27].

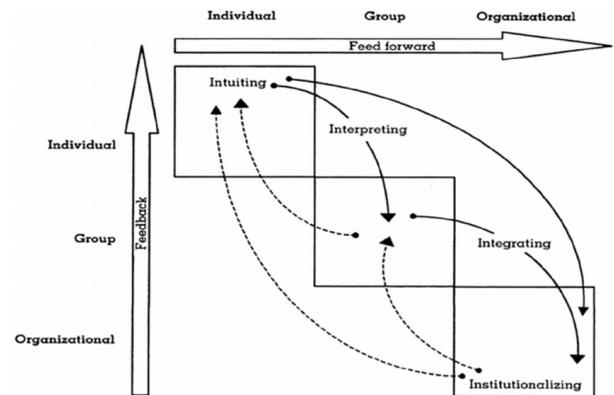


Figure 6: The 4Is Framework for Strategic Renewal [26].

Interestingly, Dutta and Crossan extended this concept, initially for much more of a formal institutional organization, into entrepreneurship [27]. The take-home point from this *Entrepreneurial Theory and Practice* publication is that the individual entrepreneur can intuit and develop ones ideas [27]. However, there is this process within the startup of gaining legitimacy, which involves the three other Is [26,27,32]. Then, the enterpreneur can extend it out into the ecosystem in the community with investors and partners and customers, and one can implement vs. have a “feed-forward” mechanism.

In this paper, Dutta and Crossan [27] raise multiple propositions, with propositions 3c through 6 most specific to the 4Is framework. Proposition 3c posits that entrepreneurial opportunity engagement involves both discovery and enactment, which the 4Is link [27]. Proposition 4 posits that (1) entrepreneurial opportunity engagement develops from intuiting to interpreting via conversations enabling entrepreneurs to develop a more coherent language to describe the opportunity (4a), and (2) projects that move to interpreting have a higher chance of implementation versus those remaining in intuiting (4b) [27]. Proposition 5 proposes that (1) entrepreneurial opportunity engagement advances from interpreting to integrating via conversations that create a shared understanding with essential stakeholders about the opportunity (5a), and (2) projects that move to integrating have a higher chance

of implementation vs. those remaining in intuiting or interpreting (5b) [27]. Proposition 6 posits that (1) institutionalized learning concerning entrepreneurial opportunities in firms reflect a culture of entrepreneurship versus those who do not (6a), and (2) entrepreneurs who engage in institutionalized learning regarding such situations achieve greater success in venture creation versus those who do not (6b) [27].

In many ways, this concept reflects other works. The most notable is Roger’s theory of diffusion of innovation (Figure 7) [34]. Diffusion is a process in which participants within a social system adopt and communicate an idea or innovation [34]. The other work relates to strategic legitimization, which considers experimentation’s signaling and convincing roles [32]. Such roles engage with the environment so the entrepreneurial venture can gain strategic legitimization [32].

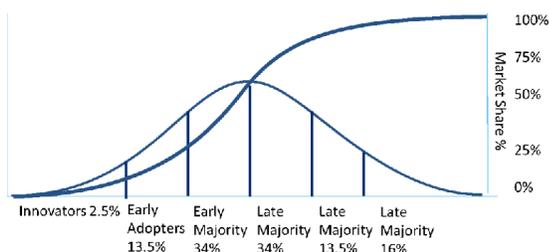


Figure 7: Rogers Diffusion of Innovation [33].

To this end, the defining questions tend to lead to a more qualitative type of research. The first two questions focus on the legitimacy issue directly.

- Does using lean startup enable a firm to effectively “feed-forward” within the firm and in the ecosystem to legitimate their business innovations and models?
- Does this process, using the lean startup, translate to the ecosystem’s “feedback” that signals legitimacy?

Considering that questions, one could focus on several propositions that Dutta and Crossan [27] proffer in their 2005 paper, with propositions 3c through 6 most specific to the 4Is framework.

Proposition 3c posits that entrepreneurial opportunity engagement involves both discovery and enactment [27].

Proposition 4 posits that (1) entrepreneurial opportunity engagement develops from intuiting to interpreting via conversations enabling entrepreneurs to develop a more coherent language to describe the opportunity (4a), and (2) projects that move to interpreting have a higher chance of implementation versus those remaining in intuiting (4b) [27].

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The second involves looking at success at the level of the individual entrepreneur.

- What is the perceived experience using lean startup on one’s ability to legitimize, as seen through the lens of 4Is?

Idea 2: The second idea involves bridging the organizational learning concepts of exploration and exploitation and utilizing an input-output model. Ghezzi [7] highlights (Figure 8) how P/MF situates as the transition point between exploration using effectuation with the lean startup and exploitation using a business plan.

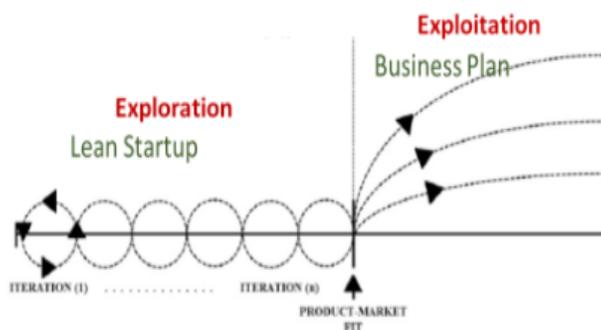


Figure 8: Scheme of Lean Startup and Business Plan Situating of Two Sides of Product/Market, as Exploratory and Exploitation Processes. Adapted Ghezzi Tech Fore and Sco Ch 2018 [7].

Hence, this illustration presents the opportunity of setting up an input-output model (Figure 9). Such a model derives from works by Burke et al. [34] and Green and Burke [35], who address the question around the effectiveness of business plans. In the first part of the model, one could compare the lean startup versus no lean startup, then consider the influence of both internal and external contextual factors on the outcome. Finally, there is some type of output endpoints, such as product/market fit or pitch results.

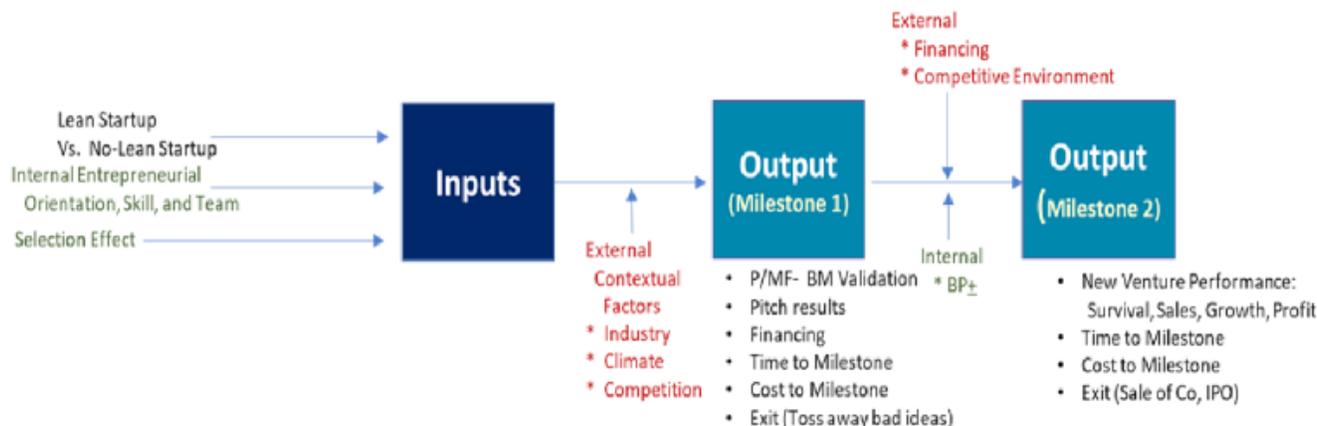


Figure 9: Proposed Input-Output Model to Evaluate Lean Startup at Two Milestone Points (Adapted from Burke et al. and Green and Hopp) [34,35].

One can progress such a study into a second phase, which it can incorporate use of a business plan or not, and consider external and internal factors. The outcome is to assess new venture performance, the sine qua non, as defined as a tangible business outcome (e.g., customer acquisition, financial independence, funding, growth, positive cash flow, revenue, survival) due to the firm’s efforts [17,35,36].

Several defining quantitative questions drive this study idea.

The first queries focus on:

- Do firms using lean startup achieve short-term milestones around product/market fit, when considering the influence of internal and external contextual factors?
- Do firms using lean startup achieve long-term milestones (e.g., new venture performance), when considering the influence of internal and external contextual factors?

The third considers the influence of a business plan in the exploitation phase.

- Does the use of a business plan following the use of the lean startup, versus the use of lean startup alone, to reach product/market fit P/MF, enhance the achievement of long-term milestones (e.g., new venture performance), when considering the influence of internal and external contextual factors?.

Conclusion and Closing Thoughts

Closing this paper returns to the original question- how can we define success with the lean startup? In many ways, one can

return to the great *Harvard Business Review* article on framing and perspective, which opens with an elevator scenario– is it too slow, or rather, the wait too long? The right answer depends on how one frames the problem, what lens one uses, and what questions one asks. Addressing this question requires some perspective and reflection on the literature streams reviewed, extant publications on performance with lean startup, and a unique lens. Such will lead to an exciting contribution to literature around the lean startup and offer interesting strategies to use in evaluating other entrepreneurial methodologies and programs.

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