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The Lean Startup

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A pragmatic view on its Flaws and Pitfalls

By

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Statutory Declaration

I declare that I have authored this thesis independently, that I have not used other than the declared sources / resources, and that I have explicitly marked all material which has been quoted either literally or by content from the used sources.

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Abstract

The methodology of the Lean startup is the latest hype in Silicon Valley and was predicted to *change everything*. Based on Toyota's Lean principles of Lean Manufacturing and Steve Blank's customer development process, it focuses on a set of guidelines to build a startup agile and iteratively, based on hypotheses validation and customer feedback. However almost six years after its first recognition, and three years after the publication its best-selling book *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses",* by Lean Startup pioneer Eric Ries, there is still practically no scientific evidence that would justify the hype. As this fosters skepticism if the methodology is as revolutionary as it was claimed, this paper takes a look on possible flaws. Using theoretically reflections and practical experiences of various actors in the startup community, its pitfalls are evaluated. The evaluation of the collected information grants insight that even there is nothing plainly *wrong* with the methodology, the Lean startup has to be applied with caution and a grain of salt. Pitfalls are lurking inter alia at its handling with marketing and sales, the MVP and preferred customer group. Purpose of this paper is to grant first insights to a predominately unexploited area of the Lean Startup and to create a foundation for further research.

Keywords

"Lean Startup", "Lean manufacturing", "build-measure-learn feedback loop", "Innovation", "Customer Development", "Minimum Viable Product", "Continuous Learning"

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1. LITERATURE REVIEW AND INTRODUCTION

The methodology of the Lean Startup was firstly introduced in 2008 as a best-practice in a company located in Silicon Valley. With its origins in the software industry, the Lean startup quickly became known beyond this border. The publication of Lean Startup pioneer Eric Ries' book: "*The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses"* (Ries, 2011) evoked the methodology's international awareness. Since then it has increased its popularity among entrepreneurs all over the world as a methodology to successfully create an innovative startup. Nowadays, meetings, lectures and workshops regarding the Lean Startup are hold all over the world.

The Lean Startup is "the application of lean thinking to the process of innovation" (Ries, 2011, p. 15). Its roots are based on Toyota' *Lean Manufacturing* principles, featuring continuous learning and improvement (Toyotal-Global, n.d.), (Ohno, 1988), and Steve Blank's principles of customer development (Blank, 2006). Product development in Lean Startups shall be agile and iterative. The focus thereby does not lie in pre-forecasted business models for several years, but rather more practically on *learning-by-doing.* Assumptions about the business model hypotheses have to be confirmed and validated in goal oriented experiments (Blank, 2006), (Blank & Dorf, 2012). In other words, the product shall be pushed to the market as soon as possible and then being adjusted iteratively, based on customer feedback (Ries, 2011). Quality has a subordinated role in this early stages. "While the final target group is not yet identified, no claims about the quality can be made" (Ries, 2011). The released product should be the first working draft of the underlying idea of the product, offering only its key functions. This version is called the *Minimal Viable Product (MVP).* The underlying reason is that early screening for adopters and users of a product under market-circumstances will increase the process' speed, while simultaneously shrink the costs (Maurya, 2012) (Ries, 2011). Additional features are then added one by one if their demand was confirmed through customer feedback. In this process, direct contact to clients and suppliers is seen as a valuable resource if their feedback leads to an increased value for the next version of the product. If a new feature fails to meet customer satisfaction, entrepreneurs are advised to learn from the mistakes and improve this feature iteratively until customer satisfaction is met (Ries, 2011), (Maurya, 2012).
This process can be summarized as the so called "build-measure-learn feedback loop".

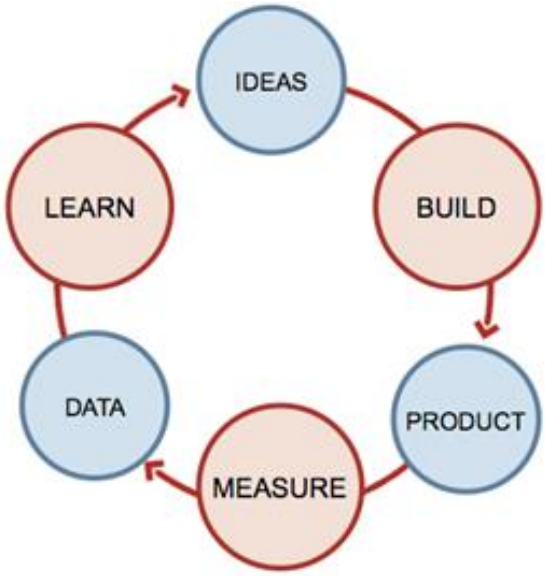

Figure 1: *From "The Lean Startup: How today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses",* by E. Ries, 2008

Opposing to the common approach to build a business plan, which forecasts strategies and actions for several years and being multiple pages long, the temporary business model using the Lean Startup approach shall not be longer than one page. As template for its business model serves an amended version of Alexander Osterwalder's Business Model Canvas (Osterwalder & Pigneur, 2010), (Clark, 2012). As the entrepreneur needs to verify if the assumptions of *problem-solution fit* and *product-market fit* are met (Maurya, 2012), (Ries, 2011) the Business Model Canvas contains all relevant information about product and customer, interrelated through the value proposition (Osterwalder & Pigneur, 2010). Summed up, the Canvas provides a visual, easily understandable yet holistic visual summary about the business idea.

The Lean Startup was praised to "change everything" (Blank, 2013). Dogmatically hyped in Silicon Valley and its methodology being praised by lean-enthusiasts, little is known about the actual, practical applicability and effectiveness of this methodology tested in the real world. Almost six years after its origins, and three years since the publication of Ries' book, there is practically no scientific evidence that the methodology of being *lean* in startups is advantageous (Patz, 2013). This fosters skepticism if the lean startup is as beneficial as claimed and as revolutionary as predicted. In order to approach this question, one has to scratch the translucent surface of the lean approach, evaluate its methodology and scan for possible flaws.

As little scientifically evidence is existent for the Lean Startup`s practical success, even less information there is about its flaws. Research on the literature for "*lean* (or *agile*) *Startup*" or "*Lean* (or *agile*) *Entrepreneur*" in

combination with keywords such as "*disadvantage*", "*flaw*", "*pitfall*", "*drawback*", "*hurdle*", "*barrier*" or "*frontier*" resulted in limited-, or non-exploitable results on scientific search engines *Scopus* and *Google Scholar*. To expand the search radius, the same keywords were used in more common search engines like *Google* and *Yahoo*. The findings of those were less scientific but more diverse. Search results showed a variety of blog entries and experience reports, analyzes and opinions, interviews and statements. As diverse as the type of source, as different is the community of authors. Entrepreneurs, lean-adopters, Venture Capitalists, Startup Incubators, and others with expertise or knowledge in this topic have written down and shared their insights. Even though these sources' contents are not scientifically proven, nor do they provide hard evidence, their abundance grant particular insight about the Lean Startup's usage and effectiveness in the real world.

The choice of sources was dependent on two main criteria:
1. Author's knowledge in the field of startups and lean practices: To extract value from a source's content, the author has to have a certain level of knowledge regarding this topic. As most of the examined sources are non-scientific, other indicators of the source's quality had to be found to measure and predict the value of the presented source.
The first measure was the quality of content of the chosen source, and additional publications from the same author. Furthermore the amount of hits, likes, feedback, positive comments and recognition for the article were taken into account. Another indicator for quality was the medium on which the author has published his work. The website's reputation in the community, traffic, and amount of users were determining factors for quality. Additionally, the reputation of the author him/herself was a determent of quality. Veterans of the Startup community like Marc Andreessen, Paul Graham or Jeff Clavier are known for their expertise and valuable insights.
2. Diversity of sources: In order to draw more holistic conclusions, authors with different backgrounds, roles and expertise in the area of startups were chosen. For example, the insights of a first-time lean startup adopter will differ from those of a venture capitalist with 20 years of industry experience.

In this paper I am going to study the above mentioned kind of sources and search for patterns across those single experience reports. Commonalities and similarities in the arguments across them will be valued as indicators of an argument's validity. The single flaws will be illustrated using the singe steps of the *build-measure-learn loop*. Flaws outside the loop, within its various steps, and throughout the loop will be examined. Goal of this research is to gain insight, if-, and which flaws and pitfalls the Lean startup has, based on theoretical criticism and practical real-life experiences.

2. OUTSIDE THE LOOP

Before this paper takes a closer look to the flaws related within the single phases of the build-measure-lean loop, pitfalls independent from the loop will be addressed.

2.1 Lean Startup & Lean Manufacturing – the Unequal Same?

According to Eric Ries, the closest analogy to the Lean Startup Movement is *Lean Manufacturing*. (Ries, 2011), (Ries, 2013). However this analogy carries inconsistencies.
Lean Manufacturing originated in *Toyota's Production System* (TPS), a socio-technical system developed by Toyota which's goals are to eliminate progress waste while throughout provide high quality products (Toyotal-Global, n.d.), (Ohno, 1988). It is a way to produce lean and use resources efficiently to ultimately increase the value for the customer. Eric Ries claims that the Lean Startup Approach also strives to reduce waste and increase efficiency (Ries, 2013).

However Lean Manufacturing is not the right approach to archive this in startups and the relation to the Lean Startup approach hardly fits. Lean Manufacturing and Lean Startup approaches may have similar goals (to reduce waste and use resources efficiently), but their strategy to achieve this differs. They share equal terms (being lean, avoid waste), but those have different meanings. In short, being lean and reducing waste in a Lean Startup deals with the avoidance to build a single feature which is not desired, saving time and money (Ries, 2011), (Maurya, 2012). Reducing waste in Lean Manufacturing is inspired by the Japanese term '*muda' (waste, futility)*, and deals with, beside other sources of waste, the reduction of overproduction and the amount of copies which have faulty deviations from the original, desired product (Ohno, 1988), (Womack & Jones, 1996). Therefore Lean Manufacturing is an appropriate tool for established companies like Toyota, where Lean Manufacturing was implemented to improve the performance of production lines with millions of identical copies of one product.
But *"Is the goal to churn out a million identical Instagrams? – Obviously not."* (Burgstone, 2012). Startups are no established companies and face different hurdles in production and creating value (Blank, 2013), (Blank, 2014). In startups, especially in the software industry, every component of the final product is unique. Being *lean* in terms of Lean Manufacturing is a useful strategy when there is a given business model to execute and the route to profit is already known and established (Blank, 2014). However a startup usually does not have such a roadmap to follow. In fact, it is a startup's purpose

to search and endeavor exactly such a scalable and repeatable business model (Blank, 2013).

In critical examination one could even argue that Lean Startup Approach and Lean Manufacturing have oppositely desired outcomes. As making mistakes, pivots and iterations are common, even crucial parts of the Lean Startup, these are the exact things Lean Manufacturing wants to eliminate – variation and discontinuity in established, linear production chains.

2.2 Does It Have To Be 'Lean'? - Not Every Startup Can, nor Should Be A Lean Startup

If one considers to be a startup manufacturer, the implementation of a lean approach can turn out to be problematic. The Lean Startup approach stems its advantages from being cheap in failure and iteration (Ries, 2011), (Maurya, 2012). The manufacturing of prototypes is an expensive endeavor. Being forced to repeatedly build new prototypes after each new cycle is a monetary duty a startup cannot afford (Pelling, 2011).

Venture capitalist and Silicon Valley celebrity Marc Andreessen claims that not every startup should become a Lean Startup. Especially companies with audacious goals have to hit the market at one point with force (Mougayar, 2013), (Cooper & Kleinschmidt, 1990) to *"get the rocket into space"* (Andreessen, 2012). Lean Startup favors small steps, incremental innovation and continuous improvements (Ries, 2011). But as one will not launch a plane until perfectly crafted, some products need to be presented as a whole to convince customers and assert on the market (Cooper & Kleinschmidt, 1990), (Mittal, 1998).

3. BUILD

This phase of the loop deals with the Lean Startup's product and its building process. Its approach is that one should build a product that offers the least amount of features required for maximized learning experience – the MVP. Quality has only a subordinated role (Ries, 2011). However to shift the focus on learning, the product's quality could suffer.

Lean Startup as Driver for Inferior Products – Is it Worth the Rush?

"[The Lean startup] is based on the concept of throwing shit at your users very early on and then iterating. The problem is that users have less and less patience now." (Clavier, 2012).

Various entrepreneurs criticized that the Lean startup's concept of an MVP favors the release of inferior, unfinished products which customers are supposed to use and rate (Finneran, 2013), (Girard, 06.2014), (Clavier, 2012). The customer basically pays for the entrepreneur's learning, as the entrepreneur depends on the customer's feedback to iterate and improve his product. But *"Customers aren't interested in funding your learning, they want reliable software that delivers value consistently."* (Finneran, 2013). Satisfied customers are more likely to stay with you as supplier. (Mittal, 1998), (Hallowell, 1996), (Bowen & Chen, 2001). One often gets only one chance to present his product and convinces the customer (Hess, Ganesan, & Klein, 2003), (Beard, 2013). *"[…] in business, failure can mean certain death, without a chance for another loop. Indeed, too many startups have died (and are doomed to) by applying this [Lean Startup] method to their business, […]."* (Fernandez, 2012). According to the research of LeBoeuf (2000), a usual business hears only of 4% of dissatisfied customers ever again. In conclusion, 96% of dissatisfied customers are not even going to leave any feedback why they are dissatisfied. As the functioning of the build-measure-feedback-loop is built on the availability of measurable metrics, extracted from customer feedback, its absence is fatal. Additionally, dissatisfied customers are likely to share their bad experience to others which could ultimately result in the loss of even more potential customers (LeBoeuf, 2000). Conclusively, a premature product release carries the risk to loose the opportunity to receive valuable feedback and ultimately the chance to win a customer for life.

Furthermore the initially released product is hard to love (Sharkey, 2013). An MVP is by definition not an in-depth product. As Guy Kawasaki stated as part of his DICEE model (Kawasaki, 2012), *"A great product is deep. It doesn't run out of features and functionality after a few weeks of use. […] As your demands gets more sophisticated, you discover that you don't need a different product."* (Kawasaki, 2012) . The MVP is not the final product, but it has to satisfy customer's need at least to that point that they continue to use it and are willing to iterate it with you (Finneran, 2013).

The strategy to launch an MVP and to add new features one by one based on customer desires and feedback carries another risk. Customer interviews may reveal the demand for features which were originally on the product's roadmap, but cancelled due to the word "minimum". As a consequence, the re-confirmation of such feature through customer demand results in an unnecessary testing loop, wasting time and money (Kortmann, 2012).

4. MEASURE

The goal of this phase is to determine if actual progress is made in comparison to the previous loop. Progress will be measured using various metrics based on customer feedback and interviews.

The Focus on Early Adopters – Analysis through the Keyhole

Reflecting the experiences and observations of startups applying the Lean method, it seems that entrepreneur's main target group are early adopters (Maurya, n.d.), (Ries, 2011). Early adopters provide an enthusiastic customer group likely to be available for customer interviews and moreover fill the company's accounts with a first little income. But to focus solely on early adopters has one major flaw. Early adopter do not represent the whole potential market. They are only one group of Moore's technology adoption lifecycle. (Moore, 2001). The cycle describes the acceptance or adoption of new innovations or product, according to various characteristics of defined customer groups (Moore, 2001), (Rogers, 2003). According to this model, early adopters (the *visionaries)*, are usually only around 13.5% of the market (Rogers, 2003), (Moore, 2001). Feedback from only this small group could lead to inconsistent measurements and distorted conclusion about the true market size. One will not get to know how big the market truly is (Girard, 06.2014). Lacking these information, the entrepreneur is left in the dark with either one of two options:

1. The market is not much bigger than the circle of early adopters. This means that the product is unlikely to be much more profitable as in its present state and probably not profitable enough to keep on investing time and money into this business.

2. The possible market goes beyond the circle of early adopters. In this case the entrepreneur would fail to recognize the true market size and potential - not perceiving the opportunity's full scope as he has limited himself in the choice of screening subjects. The technology adoption lifecycle furthermore states that early adopters and the subsequent groups, the early maturity, (the *pragmatists)*, have different expectations of the product (Moore, 2001), (Rogers, 2003). As the pragmatists count, according to Moore (2001), for 34% of the market, it is advisable to take their interests into account too. This is especially important as the gap between the early adopters and early maturity is known as the *chasm*, the barrier between the innovative, development-driven phase of an innovation and its acceptance on the broad mass market (Moore, 2001), (Rogers, 2003). As crossing the chasm is crucial to avoid business failure in the long run (Mohr, Sengupta, & Slater, 2009), (Slater & Mohr, 2006), (Jiang, 2014), the interests of potential customers beyond the chasm should be taken into account.

5. LEARN

Failure and learning are essential components in the Lean Startup. But if one fails to lean form failure, previous measurement was in vain. Moreover it could lead to false conclusion and missed opportunities.

About a Lack of Persistence, a Fetish for Failure and Disillusioned Expectations

Marc Andreessen once said is that Lean Startup takes away the stigma from failing and is a great excuse for not being persistent enough (Andreessen, 2012). It is a permission to give up and blame the pivot to drop an idea early. Andreessen jokingly speaks from a fetish for failure. Generally failing is nothing bad and can even be valuable, as long as the experiences lead to the path of success (Cope, 2011), (Shepherd, 2003), (Andreessen, 2012).

Also Paul Graham, co-founder of *Y Combinator*, stated that key to successfully launch a startup is persistence. One needs the faith that his idea right, that it will work and make a difference. In other words "*What if, like Edison, it doesn't work 99 times. Does Lean Startup give you any reason to try the 100th time? No, pivot. It's not working. Try a different idea*." (Pedraza, 2013).

Moreover the terms of the Lean Startup became blurred and misconstrued. During my research for this paper I stumbled upon at least as many reports and reviews which misinterpreted the Lean Startup, the MVP and other features of the Lean Startup, as those who used them correctly. This development is surely not to be ascribed to Eric Ries or the Lean startup approach itself, but more due to the numerous lean-followers and tech bloggers who, presumably through the hype emerged around the Lean Startup, did not read the whole book, but rather collected information from external sources, which carry the threat to be superficial or deficient. (Ng, 2014), (Ries, 2013). As a result, many entrepreneurs, tech bloggers and other adopters of the Lean movement have an own picture of the Lean Startup and its principles, and furthermore add to the confusion as they publish their own experiences based on false information and expectation. One of the resulting outcomes is the creation of distorted images of the Lean Startup. Based on the observations during the literature review, it appears that many see the Lean startup as a complete tool to successfully build a startup (Girard, 06.2014). But to quote Eric Ries: *"Those who look to adopt the lean startup as a defined set of steps or tactic will not succeed. […] ultimately, the lean startup is a framework, not a blueprint of steps to follow."* (Ries, 2013)

6. THROUGHOUT THE LOOP

There are flaws that cannot be assigned to a single phase of the loop, but rather address the whole cycle. The biggest issue which fits this criteria are marketing and sales.

Marketing & Sales - Lean Startup's Neglected Companion

The Lean Startup approach is often used as an excuse to skim on marketing and sales (Andreessen, 2012). Eric

Ries originally worked as a software engineer, fond with program development and the technical side of his industry. His bosses, as he said, were the managers and marketers (Ries, 2011). Ries' book is a result of his technically oriented career (Ries, 2011). The book's concept, and the Lean startup itself, are written from his technical perspective as an engineer (Girard, 06.2014). As a consequence, as much as the book guides through the technical side of creating a lean startup, as little advice is given on marketing and sales.

As online marketing specialist and startup consultant Alan Gleeson claims: *"there are only two priorities for a start-up: Winning the market and not running out of cash."* (Gleeson, 2012). To run lean and skim on marketing will not face any of these hurdles. According to the McClure's *AARRR Metrics*, a startup metrics for product marketing and product management (McClure, 2007), one needs at least 100 people to be generally interested in one's product to accomplish two sales. The sum of criteria presented in this paper - the small ratio between general interest and actual sales, the focus on the relatively small group of early adopters, the risk of abandonment of dissatisfied customers due to the release of inferior products, and the subordinated role of marketing and sales carries the threat the startup may fall into a financial inclination.

7. DISCUSSION

Many of the flaws and pitfalls presented in this paper could be prevented or overcome with a few adjustments to the underlying methodology.

As for the release of an inferior product, one should ask himself: *is it really worth the rush?* One is advised not to skim on the product's quality, forego useful features due to the word *minimum*, or hastily release a product to hit the market a little earlier. John Finneran (2013) for example suggests that instead of an MVP, one should strive for a Minimum *Desirable* Product – an MDP to initially release. As in his definition, an MDP has to cause enough satisfaction and desire for the customer to stay interested and is not going to abandon the MVP (Finneran, 2013).

Another helpful tool to determine if an MVP is ready to be launched is *Kano's model of customer satisfaction*. The model is a theory of customer satisfaction and product development (Kano, Seraku, Takahashi, & Tsuji, 1984). It divides customer preferences into five categories – each of them concerning different levels of customer expectations and their reactions if satisfaction is met or not. Within this model, *Must-Be Qualities* are described as attributes which are taken for granted and result in dissatisfaction if not met. (Kano, Seraku, Takahashi, & Tsuji, 1984), (Matzler & Hinterhuber, 1998). Must-Be Qualities are the threshold of quality a customer expects in any case. Therefore the entrepreneur is advised to consider if the MVP meets this quality before its release to increase the probability that the customer stays with the product and is willing to follow the entrepreneur through the next round of iteration.

Additionally, to take marketing into account throughout the whole build-measure-feedback loop has numerous advantages while simultaneously face a variety of hurdles.

To market the product upfront might attract potential customers to subscribe to the product/service from the very beginning. This could lead to a more diverse customer group, exceeding the barrier of solely having early adopters. And even if the customer rush won't arise, and people ignore the product, one can still make concluding assumptions why the product does not trigger enough desire (Girard, 06.2014). Furthermore it is advisable to especially take the subsequent group of Moore's technology adoption lifecycle, the pragmatists into account, as their market share exceeds twice the percentage of early adopters and they represent the desires of the broad market. Moreover, early and continuous marketing addresses the issue to run out of cash and supports the endeavor to dominate the market. Thoughtful marketing has the potential to increase revenue and product awareness.

Several entrepreneurs criticize the Lean Startup Approach as a missed opportunity to grow fat (Girard, 06.2014), (Finneran, 2013). Both, running *lean* or *fat* are tactics to ensure a startup's liquidity and to win the market. While being *lean* is helpful to be sparing with internal resources, *fat*-tactics support the generation of additional, external resources. *"By making 'running lean' an end, you may lose your opportunity to win the market, either because you fail to fund the R&D necessary to find product/market fit or you let a competitor out-execute you in taking the market."* (Horowitz, 2010)..

In order to increase awareness of the importance of marketing and sales in Lean Startups, I suggest an adaption to the existing build-measure-lean feedback loop, which includes the role of marketing. The improved loop should outline marketing and sales' role in each stage of the loop. The concrete adjustment of the loop should be implemented in best case by Eric Ries himself, as this would favor the adjustment's quick distribution in the startup community.

Finally is to mention that the flaws and pitfalls dealt within this paper, apply with different magnitudes for each startup or user of the Lean Startup and the build-measure-learn feedback loop. This does also apply for the advice given in this discussion. The Lean Startup is no blueprint for success to follow, and one has to weight for himself how much the here presented information and remarks apply to one's individual situation.

8. CONCLUSION

With the Lean startup, Eric Ries has developed a business methodology applicable for entrepreneurs who seek to build a startup using as little resources as possible and keep failure, if happening, cheap. It is certainly not a

complete roadmap for the growth of a successful startup, but more a set of guidelines one can use to validate his startup's idea early and for relatively little money as compared to the classical approach.

There is hardly anything one could argue which is plainly *wrong* with the Lean startup. However, as much as Lean Startup was hyped in the startup community, there is still little evidence of success which would justify this hype.
The comparison with Toyota's Lean Manufacturing has to be treated with caution. Even though both approaches share similar vocabulary and interests, Lean Startup and Lean Manufacturing are two different approaches with different means to archive their goals.
The lean startup has its flaws and pitfalls which one has to take into account when used. Users have to be aware that the release of an MVP which doesn't deliver enough satisfaction is just the release of an inferior product. And a bad first impression can be hard, sometimes impossible to straighten out.

Ries' book is written from the perspective of engineer and short on instructions about marketing and sales. This carries the threat that entrepreneurs could quickly run out of money, as only little revenue is generated. It is advisable to redesign the build-measure-learn-loop in that way that it takes at least a basic approach for marketing into account. This would also add to the solution of the pitfall to focus solely on early adopters. Generally, one should not waste the opportunity to grow fat if possible. Running lean is not an end, neither is running fat. The goal is to find a healthy balance.

The lean startup can be helpful in the early phases of a startup and customer development, but only little beyond. It is not suitable for every startup and not a complete roadmap for guaranteed startup-success. It is advised to take it with a little grain of salt, to use it at the early stages of a startup and shift the focus to R&D and marketing as soon as possible.

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