

A summary of the book

The Lean Startup

How Today's Entrepreneurs Use Continuous Innovation to Create
Radically Successful Businesses

By Eric Ries

Summary by Kim Hartman



This is a summary of what I think is the most important and insightful parts of the book. I can't speak for anyone else and I strongly recommend you to read the book in order to fully grasp the concepts written here. My notes should only be seen as an addition that can be used to refresh your memory after you've read the book. Use the words in this summary as anchors to remember the vitals parts of the book.

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Description from amazon

Eric Ries defines a startup as an organization dedicated to creating something new under conditions of extreme uncertainty. This is just as true for one person in a garage or a group of seasoned professionals in a Fortune 500 boardroom. What they have in common is a mission to penetrate that fog of uncertainty to discover a successful path to a sustainable business.

The Lean Startup approach fosters companies that are both more capital efficient and that leverage human creativity more effectively. Inspired by lessons from lean manufacturing, it relies on “validated learning,” rapid scientific experimentation, as well as a number of counter-intuitive practices that shorten product development cycles, measure actual progress without resorting to vanity metrics, and learn what customers really want. It enables a company to shift directions with agility, altering plans inch by inch, minute by minute.

Rather than wasting time creating elaborate business plans, The Lean Startup offers entrepreneurs - in companies of all sizes - a way to test their vision continuously, to adapt and adjust before it's too late. Ries provides a scientific approach to creating and managing successful startups in a age when companies need to innovate more than ever.

Part One - Vision

Chapter 1 – Start

The myth of the loss of manufacturing capabilities: The huge productivity increases made possible by modern mismanagement and technology have created more productivity capacity than firms know what to do with. More output, less jobs.

Lean thinking: drawing on the knowledge and creativity of individual workers, shrinking batch sizes, just-in-time production and inventory control, acceleration of cycle times.

Progress measure: Instead of measuring progress in manufacturing by the production of high-quality physical goods, the lean startup measure progress through validated learning.

Productivity: When people are used to evaluating their productivity locally, they feel that a good day is one in which they did their job well all day. The lean startup asks people to figure out the right thing to build – the thing customers want and will pay for – as quickly as possible.

Build-measure-learn feedback loop: instead of making a lot of assumptions, you can make constant adjustments with a steering wheel called build-measure-learn. Through this process we can learn if and when to make a sharp turn – a pivot.

Chapter 2: Define

Innovation factory: A company's only sustainable path to long-term economic growth is to build an "innovation factory" that uses lean startup techniques to create disruptive innovations on a continuous basis.

Culture and systems: It's moving leaders from playing Caesar with their thumbs up and down on every idea to – instead – putting in a culture and the systems so that teams can move and innovate at the speed of the experimentation system.

Chapter 3: Learn

Validated Learning

Validated learning is not after-the-fact rationalization or a good story designed to hide failure. It is a rigorous method for demonstrating progress when one is embedded in the soil of extreme uncertainty in which startups grow. Validated learning is the process of demonstrating empirically that a team has discovered valuable truths about a startups present and future business prospects. It is more concrete, more accurate, and faster than market forecasting or classical business planning.

Learning is the essential unit of progress for startups. The effort that is not absolutely necessary for learning what customers want can be eliminated. This is validated learning, because it is always demonstrated by positive improvements in the startups core metrics. Validated learning is backed up by empirical data collected from real customers.

The way forward is to learn to see every startup in any industry as a grand experiment. The question is not “can this product be built?” but “can this product be built?” and “can we build a sustainable business around this set of products and services.

Your job is to find a synthesis between your vision and what customers would accept; it wasn't to capitulate to what customers thought they wanted or to tell customers what they ought to want.

True startup productivity: systematically figuring out the right things to build. In the lean startup, every product, every feature, every marketing campaign – everything a startup does – is understood to be an experiment designed to achieve validated learning.

Lean thinking: Lean thinking defines value as providing benefit to the customer, anything else is waste. In a manufacturing business, customers don't care how the product is assembled, only that it works correctly. But in a startup, who the customer is and what the customer might find valuable are unknown, part of the very uncertainty that is an essential part of the definition of a startup.

Chapter 4: Experiment

One of the most important lessons of the scientific method – if you cannot fail, you cannot learn.

The experiment phase: it begins with a clear hypothesis that makes predictions about what is supposed to happen. Startup experimentation is guided by the startups vision. The goal of every startup experiment is to discover how to build a sustainable business around that vision. Even when experiments produce a negative result, those failures prove instructive and can influence strategy. In the lean startup model, an experiment is more than just a theoretical inquiry; it is also a first product.

The two most important assumptions entrepreneurs make are:

- **The value hypothesis** – test whether a product or service really delivers value to customers once using it.
- **The growth hypothesis** – test how new customers will discover a product or service.

The product manager usually says “I want this”, and the engineer answers “I am going to build that”.

Instead answer 4 questions:

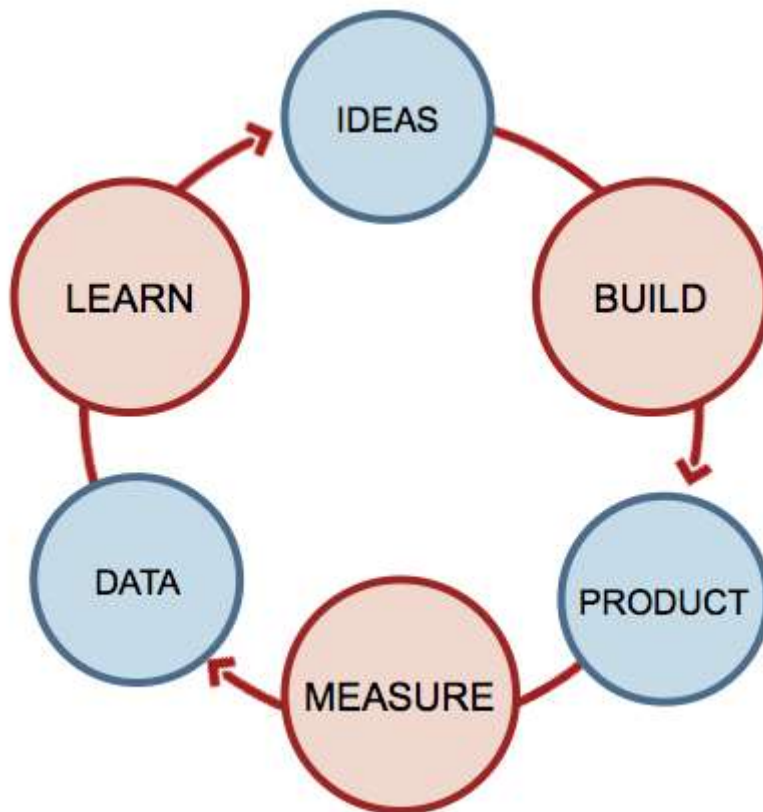
1. Do consumers recognize that they have the problem you are trying to solve?
2. If there was a solution, would they buy it?
3. Would they buy it from us?
4. Can we build a solution for that problem?

Success is not delivering a feature; success is learning how to solve the customer’s problem.

Part two: Steer

The feedback loop

Ideas > build > product > measure > data > learn > ideas > and so on (circle)



[Image source](#) (thanks)

Minimizing the total time: Many people have training that emphasizes one element of the feedback loop. But having the best business idea or the best designed product isn't enough; we need to focus our energies on minimizing the total time through this feedback loop.

Minimum Viable Product: Once clear on the leap-of-faith decisions, the first step is to enter the build phase as quickly as possible with a minimum viable product – MVP. The MVP is that version of the product that enables a full turn of the build-measure-learn loop with a minimum amount of effort and the least amount of development time.

Learning milestones: an alternative to traditional business and product milestones. Learning milestones are useful for entrepreneurs as a way of assessing their progress accurately and objectively.

Chapter 5: Leap

Startup strategy: For startups, the role of strategy is to help figure out the right questions to ask.

The first challenge for an entrepreneur is to build an organization that can test these assumptions systematically. The second challenge, as in all entrepreneurial situations, is to perform that rigorous testing without losing sight of the company's overall vision.

Leap-of-faith assumptions: The riskiest elements of a startup plan are the leap-of-faith assumptions. The two most important assumptions are the value hypothesis and the growth hypothesis. These give rise to tuning variables that control a startup's engine of growth. Each iteration of a startup is an attempt to rev this engine to see if it will turn. Once it is running, the process repeats, shifting into higher and higher gears.

Example leap of faith: will break or make your business. In the iPod business, one of those leaps of faith was that people would pay for music.

Genchi Gembutsu: "Go and see for yourself". Means that business should be based on deep firsthand knowledge. Until you have seen something for yourself firsthand you cannot be sure you really understand any part of the business problem.

External customer data: The facts that we need to gather about customer exist only outside the building.

Customer archetype: Early contact with the customer clarifies a basic coarse level that we can use to craft a customer archetype – a brief document that seeks to humanize the proposed target customer.

Chapter 6: Test

MVP definition: A minimum Viable Product helps entrepreneurs start the process of learning as quickly as possible. It is not necessarily the smallest product imaginable, though; it is simply the fastest way to get through the build-measure-learn feedback loop with the minimum amount of effort. MVP is designed not just to answer product design or technical questions. Its goal is to test fundamental business hypotheses. The MVP is only the first step on a journey of learning. Down that road – after many iterations – you may learn that some element of your product or strategy is flawed and decide it is time to make a change (pivot) to a different method for achieving your vision.

The concierge MVP: in a concierge MVP, a personalized service is not the product but a learning activity designed to test the leap of faith assumptions to the company's growth model. Without a formal growth model, many companies get caught in the trap of being satisfied with a small profitable business when a pivot (change in course or strategy) might lead to a more significant growth.

MVP rule: When building your MVP, remove any feature, process or effort that does not contribute directly to the learning you seek. Even a low quality MVP can act in service of building a great high-quality product.

Constant feedback: Bring continually in people to react to mockups, prototypes and simulations.

Early adopters

Before new products can be sold successfully to the mass market, they have to be sold to early adopters. These people are a special breed of customer. They accept – in fact prefer – an 80 percent solution; you don't need a perfect solution to capture their interest. Early adopters use their imagination to fill in what a product is missing. They prefer that state of affairs, because what they care about above all is being the first to use or adopt a new product or technology. Early adopters are suspicious of something that is too polished; if it's ready for everyone to adopt, how much advantage can one get by being early?

Wizard of Oz testing: in WoOT, customers believe they are interacting with the actual product, but behind the scenes human beings are doing the work. Very inefficient, but easy to build on micro scale.

High-quality experiences: Most business philosophies focus on producing high-quality experiences for customers as a primary principle. This presupposes that the company already knows what attributes of the product the customer will perceive as worthwhile, and this is a risky assumption in a startup. If we don't know who the customer is, we do not know what quality is.

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We must always ask: what if the user doesn't care about the design in the same way we do?

We must be willing to set aside our traditional professional standards to start the process of validated learning as soon as possible.

A head start is rarely large enough to matter, and time spent in stealth mode – away from customers – is unlikely to provide a head start. The only way to win is to learn faster than anyone else.

Chapter 7: Measure

A startup's job is to:

1. Rigorously measure where it is right now, confronting the hard truths that assessment reveals and then...
2. Device experiments to learn how to move the real numbers closer to the ideal reflected in the business plan.

Innovation accounting

Innovation accounting: We all need a disciplined, systematic approach to figuring out if we are making progress and discovering if we are actually achieving validated learning. This is called innovation accounting; an alternative to traditional accounting designed specifically for startups, and begins by turning the leap-of-faith assumptions into a quantified financial model. IA works in three steps:

1. Use a MVP to establish real data on where the company is right now
2. Startups must attempt to tune the engine from the baseline toward the ideal.
3. After the startup has made all the micro changes and product optimizations it can move its baseline toward the ideal, the company reaches a decision point: pivot or preserve.

The innovation accounting framework makes it clear when the company is stuck and needs to change direction.

The importance of innovation accounting: Only 5 % of entrepreneurship is the big idea, the business model, the whiteboard strategizing, and the splitting up of the spoils. The other 95 % is the gritty work that is measured by innovation accounting: product prioritizing decisions, deciding which customers to target or listen to, and having the courage to subject a grand vision to constant testing and feedback.

Learning milestone: The MVP provides the first example of a learning milestone. An MVP allows a startup to fill in real baseline data in its growth model – conversion rates. Sign up and trial rates, customer life value etc. – and this is valuable as the foundation for learning about customers and their reactions to product even if that foundation begins with extremely bad news.

Tuning the engine: Once the baseline has been established, the startup can work toward the second learning milestone: tuning the engine. Every product development, marketing other initiative that a startup undertakes should be targeted at improving one of the drivers of its growth models.

Pivot or preserve: If we are not moving the drivers of our business model, we are not making progress. That becomes a sure sign that it is time to pivot. When a company pivots, it starts the process all over again, reestablishing a new baseline and then tuning the engine from there. The sign of a successful pivot is that these engine-tuning activities are more productive after the pivot than before.

The sign of a successful pivot: the new experiments you run are overall more productive than the experiments you were running before.

Pattern for making a pivot or preserve: poor quantitative results force us to declare failure and create the motivation, context, and space for more qualitative research. These investigations produce new ideas – new hypotheses – to be tested, leading to a possible pivot. Each pivot unlocks new opportunities for further experimentation, and the cycle repeats. Each time we repeat this simple rhythm: establish the baseline, tune the engine, and make a decision to pivot or preserve.

Cohort analysis: this is one of the most important tools of startup analytics. Instead of looking at cumulative totals or gross numbers such as total revenue and total number of customers, one looks at the performance of each group customers that comes into contact with the product independently. Each group is called a cohort.

Metrics

Actionable metrics: the kind of metrics we use to judge our business and our learning milestones.

Farbs user stories: Instead of writing a specification for a new feature that described it in technical terms, Farb would write a story that described the feature from the point of view of the customer.

Split test benefits: split tests almost always save tremendous amount of time in the long run by eliminating work that doesn't matter to customers. It also helps teams refine their understanding of what customers want and don't want.

The 3 mA's of metrics:

- Actionable
- Accessible
- Auditable

Actionable metrics: For a report to be considered actionable, it must demonstrate clear cause and effect. Otherwise it is a vanity metric. When cause and effect is clearly understood, people are better able to learn from their actions. Human beings are innately talented learners when given a clear and objective assessment.

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Accessible metrics: departments too often spend their energy learning how to use data to get what they want rather than as genuine feedback to guide their future actions. Remember that metrics are people, too. Everyone must understand the reports.

Auditable metrics: We must ensure that the data is credible to employees.

Chapter 8: Pivot or Preserve

Pivot definition: A structured course correction designed to test a new fundamental hypothesis about the product, strategy and engine of growth. A pivot requires that we keep one foot rooted in what we have learned so far, while making a fundamental change in strategy in order to seek even greater validated learning.

Pivot sooner than later: Ask most entrepreneurs who have decided to pivot and they will tell you that they wish they had made the decision sooner.

The land of the living dead: Happens when a company has achieved a modicum of success – just enough to stay alive – but is not living up to the expectations of its founders and investors. Companies that cannot bring themselves to pivot to a new direction on the basis of feedback from the marketplace can get stuck in the land of the living dead, neither growing enough nor dying, consuming resources and commitment from employees and other stakeholders but not moving ahead.

Learning Milestones goal: The goal of creating learning milestones is not to make the decision easy; it is to make sure that there is relevant data in the room when it comes time to decide.

The Runaway: The true measure of runaway is how many pivots a startup has left: the number of opportunities it has to make a fundamental change to its business strategy.

Vanity metrics prevents pivoting: Vanity metrics can allow entrepreneurs to form false conclusions and live in their own private reality. When an entrepreneur has an unclear hypothesis, it's almost impossible to experience complete failure, and without failure there is usually no impetus to embark on the radical change a pivot requires. You will always succeed - in seeing what happens. You won't know whether to pivot or preserve.

Common with pivots: it is not necessary to throw out everything that came before and start over. Instead, it is about repurposing what has been built and what has been learned to find a more positive direction.

From early adopters to mainstream: The rationale for building low-quality MVPs is that developing any features beyond what early adopters require is a form of waste. Once you have found success with early adopters, you want to sell to mainstream customers. Mainstream customers have different requirements and are much more demanding.

The heart of the lean startup: A pivot is not just an exhortation to change. It is a special kind of structured change designed to test a new fundamental hypothesis about the product, business model and engine of growth. It is the heart of the lean startup method.

Types of pivots:

- **Zoom-in pivot:** What previously was considered a single feature in a product becomes the whole product.
- **Zoom-out pivot:** What was considered as the whole product becomes a single feature of a much larger product.
- **Customer segment pivot:** The product hypothesis is partially confirmed, solving the right problem, but for a different customer than originally anticipated.
- **Customer need pivot:** The product hypothesis is partially confirmed: the target customer has a problem worth solving, just not the one that was originally anticipated.
- **Platform pivot:** Refers to a change from an application to a platform or vice versa.
- **Business architecture pivot:** For example when a startup goes from high margin/low volume to mass market or vice versa.
- **Value capture pivot:** how do companies capture value?
- **Engine of growth pivot:** A company changes its growth strategy to seek faster or more profitable growth.
- **Channel pivot:** Is the recognition that the same basic solution could be delivered through a different channel with greater effectiveness.
- **Technology pivot:** When discovering a technology to achieve the same solution by using a completely different technology.

Part three – Accelerate

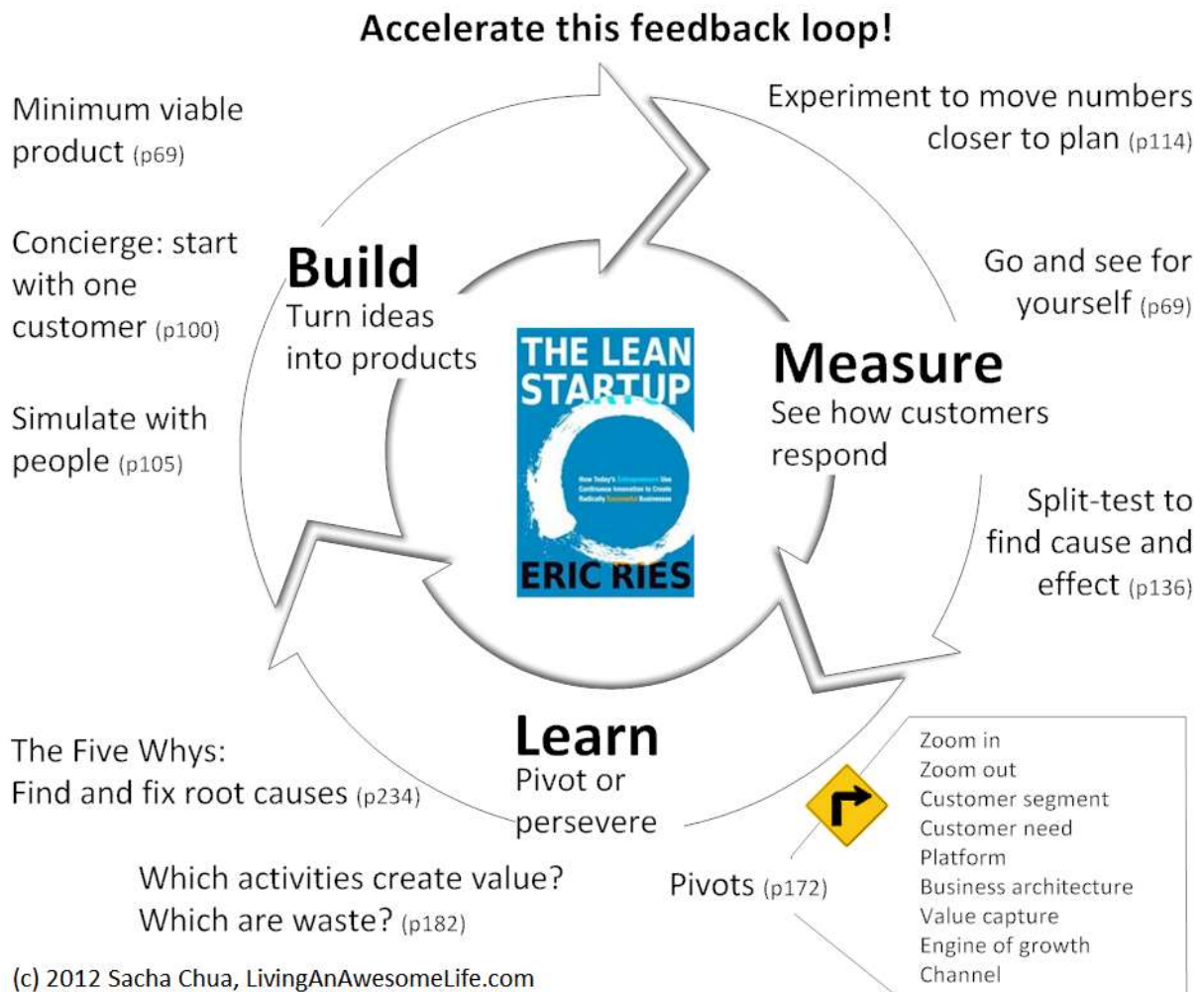


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Structures: Startups need organizational structures that combat the extreme uncertainty that is a startups chief enemy.

Value in a startup: The critical first question for any lean transformation is: which activities create values and which are a form of waste? Once you understand this distinction, you can begin using lean techniques to drive out waste and increase the efficiency of the value-creating activities. Value in a startup is not the creation of stuff, but rather validated learning about how to build a sustainable business. What products do customers really want? How will our business grow? Who is our customer? Which customer should we listen to and which should we ignore.

Just-in-time: Just as lean manufacturing has purchased a just-in-time approach to building products, reducing the need for in-process inventory; Lean startups practice just-in-time scalability.

Sustainable growth follows one of **three engines of growth**:

- Paid
- Viral
- Sticky

Choosing engine of growth: By identifying which engine of growth a startup is using, it can then direct energy where it will be most effective in growing the business. Each engine requires a focus on unique metrics to evaluate the success of new products and prioritize new experiments.

Sustainable AND disruptive: Today companies must learn to master a management portfolio of sustainable AND disruptive innovation.

Chapter 9: Batch

Small batches: Every Lean startup technique we have discussed so far works its magic in two ways: by converting push methods to pull and reducing batch sizes. The biggest advantage of working in small batches is that quality problems can be identified much sooner. Working in small batches ensures that a startup can minimize the expenditure of time, money, and effort that ultimately turns out to have been wasted. Small batches let people discover the truth faster.

Example small batches vs. large batches - letter folding:

Fold all of the letters, attach the seal and put on the stamps. This approach is called single-piece flow in lean manufacturing. It works because of the surprising power of small batches. Single-piece flow is so named because it has a batch size of one. The extra time required to sort, stack, and move around the large piles of half-complete envelopes when it's done the other way. The small-batch approach produces a finished product every few seconds, whereas the large-batch approach must deliver all the products at once, at the end.

Even if the amount of time that each process took was exactly the same, the small batch production approach still would be superior. Imagine that the letter's didn't fit in the envelopes. With the large-batch approach, we wouldn't find that out until nearly the end.

Toyota's small batches: Instead of buying large specialized machines that could produce thousands of parts at a time, Toyota used smaller general-purpose machines that could produce a wide variety of parts in small batches. This required figuring out ways to reconfigure each machine rapidly to make the right part at the right time. By focusing on this "changeover time", Toyota was able to produce entire automobiles by using small batches throughout the process.

Toyota did not ask workers to work faster but reimagined and restructured the work that needed to be done. Every investment in better tools and process had a corresponding benefit in terms of shrinking the batch size of work. The smaller batch sizes created a greater diversity of products and Toyota could therefore serve its smaller, more fragmented markets and still compete with the mass producers.

Toyotas andon chord: an assembly line works best when it is functioning smoothly, rolling car off the end of the line. The andon chord can interrupt this careful flow as the line is halted repeatedly. However, the benefits of finding and fixing problems faster outweigh this cost.

Large batches: Behind the scenes, in the development and design of the product itself, large batches are still the rule. The work that goes into the development of a new product proceeds on a virtual assembly line.

Example of Continuous deployment in the software industry:

1. *Hardware becoming software*

The latest phones and tablets computers are little more than a screen connected to the internet. Almost all of their value is determined by their software. What can be built out of software can be modified much faster than a physical or mechanical device can.

2. *Fast production changes*

Many assembly lines are set up to allow each new product that comes off the line to be customized completely without sacrificing quality or cost-effectiveness. Historically, this has been used to offer the customer many choices of product, but in the future, this capability will allow the designers of products to get much faster feedback about new versions.

3. *3D printing and rapid prototyping tools*

New technologies are allowing entrepreneurs to build small batches of products that are of the same quality but at much lower cost and much faster.

The lesson: by reducing batch size, we can get through the build-measure-learn feedback loop more quickly than our competitors can. The ability to learn faster from customers is the essential advantage that startups must possess.

School of One: In school of One, students have daily playlists of their learning tasks that attuned to each student's learning needs, based on that student's readiness and learning style. There are assessments built into each activity so that data can be fed back to the teacher to choose appropriate tasks for the next playlist. This data can be aggregated across classes, schools or even whole districts. You can see immediately the change on those of your students who are at that point in the curriculum. If you judge it to be a good change, you could roll it out immediately for every single student.

Large-batch death spiral: Large batches tend to grow over time. Because moving the batch forward often results in additional work, rework, delays, and interruptions, everyone has an incentive to do work in ever-larger batches, trying to minimize this overhead. This is called large-batch death spiral.

Experiment early: As soon as we can formulate a hypothesis we want to test, the product development team should be engineered to design and run this experiment as quickly as possible, using the smallest batch size that will get the job done.

Build-measure-learn really works in the reverse order: we figure out what we need to learn and then work backwards to see what product will work as an experiment to get that

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learning. Thus, it's not the customer, but rather our hypothesis about the customer, that pulls work from product development and other functions. Any other work is waste.

Chapter 10: Grow

The engine of growth is the mechanism that startups use to achieve sustainable growth. Sustainable growth is characterized by one simple rule: *New customers come from the actions of past customers.*

There are four primary ways past customers drive sustainable growth:

1. **Word of mouth.** Embedded in most products is a natural level of growth that is caused by satisfied customer's enthusiasm for the products.
2. **As a side effect of products usage.** Fashion or status, such as luxury goods products, drive awareness of themselves whenever they are used.
3. **Through funded advertising.** As long as the cost of acquiring a new customer (marginal cost) is less than the revenue that customers generates (marginal revenue), the excess (marginal profit) can be used to acquire more customers. The more marginal profit, the faster the growth.
4. **Through repeat purchase or use.** Like subscriptions or voluntary repurchases.

Engines of growth: The sources of sustainable growth power feedback loops that are called engines of growth. Each is like a combustion engine, turning over and over. The faster the loop turns, the faster the company will grow. Technically, more than one engine of growth can operate in a business at a time. Successful startups usually focus on just one engine of growth, specializing in everything that is required to make it work. Engines of growth are designed to give startups a relatively small set of metrics on which to focus their energies. Startups have to focus on big experiments that lead to validated learning. The engines of growth framework help them stay focused on the metrics that matter.

The sticky engine of growth: Companies using the sticky engine of growth track their attrition rate or churn rate very carefully. The churn rate is defined as the fraction of customers in any period who fail to remain engaged with the company's product. The rules that govern the sticky engine of growth are pretty simple: if the rate of new customer acquisition exceeds the churn rate, the product will grow. The speed of growth is determined by what the churn rate compounding, which is simply the natural growth rate minus the churn rate.

The viral engine of growth: products that exhibit viral growth depends on person-to-person transmission as a necessary consequence of normal product use. Customers are not intentionally acting as evangelists; they are not necessarily trying to spread the words about the product. Growth happens automatically as a side effect of customers using the product.

The viral loop: its speed is determined by a single mathematical term called the viral coefficient. The higher this coefficient is, the faster the product will spread. The viral coefficient measure how many new customers will use a product as a consequence of each new customer who signs up. Example: For a product with a viral coefficient of 0, 1, one in

every ten customers will recruit one of his or her friends. A viral loop with a coefficient that is greater than 1, 0 will grow exponentially, because each person who signs up will ring, on average, more than one person with him or her.

The paid engine of growth: each customer pays a certain amount of money for the product over his or her lifetime as a customer. Once variable costs are deducted, this usually is called the customer lifetime value (LTV). Suppose an ad costs 100 bucks and causes 50 new customers to sign up for the service. This ad has a cost per acquisition (CPA) of 2 bucks. If the product has an LTV that is greater than 2 buck, the product will grow. The margin between the LTV and the CPA determines how fast the paid engine of growth will turn.

Product/market fit: Describes the moment when a startup finally finds a widespread set of customers that resonate with its product.

Chapter 11: Adapt

Adaptive organization: We never stopped and decided that we needed to build a great training program. Instead, the training program evolved organically out of a methodical approach to evolving our own process. This process of orientation was subject to constant experimentation and revision so that it grew more effective – and less burdensome – over time. This building is called an adaptive organization, one that automatically adjusts its process and performance to current conditions. Although the primary changes that are required in an adaptive organization are in the mindset of its employees, changing the culture is not sufficient.

One of the most important discoveries of the lean manufacturing movement: you cannot trade quality for time. If you are causing or missing quality problems now, the resulting defects will slow you down later. Service businesses have the same challenges.

Adaptive processes: To accelerate, Lean startups need a process that provides a natural feedback loop. Adaptive processes force you to slow down and invest in preventing the kinds of problems that are currently wasting time. As those preventive efforts pay off, you naturally speed up again.

The five why's

At the root of every seemingly technical problem is a human problem. Five Why's provides an opportunity to discover what that human problem might be.

Example of five why's:

1. Why did the machine stop? (There was an overload and the fuse blew)
2. Why was there an overload? (the bearing was not sufficiently lubricated)
3. Why was it not lubricated sufficiently? (the lubrication pump was not pumping sufficiently)
4. Why was it not pumping sufficiently? (the shaft of the pump was worn and rattling)
5. Why was the shaft worn out? (there was no strainer attached and metal scrap got in)

If this procedure were not carried through, one might simply replace the fuse or the pump shaft. In that case, the problem would recur within a few months.

The five why's approach acts as a natural speed regulator. The more problems you have, the more you invest in solutions to those problems. As the investments in infrastructure or process pay off, the severity and number of crises are reduced and the team speeds up again.

Blame: When blame inevitably arises, the most senior people in the room should repeat this mantra: if a mistake happens, shame on us for making it so easy to make that mistake.

Waterfall product methodology: Waterfall product methodology product development teams have used it for years. It is a linear, large batch system that relies for success on proper forecasting and planning. In other words, it is completely maladapted for today's rapidly changing business environment.

A startups work is never done: even established companies alike must learn to juggle multiple kinds of work at the same time, pursuing operational excellence and disruptive innovation. This requires a new kind of portfolio thinking.

Chapter 12: Innovate

Three structural attributes: Startup requires three structural attributes: scarce but secure resources, independent authority to develop their business, and a personal stake in the outcome. And it doesn't have to be financial. The parent organization have to make it clear who the innovator is and make sure the innovator receives the credit for having brought the new product to life – if it is successful.

Startup budgets: Too much budget is as harmful as too little – startups are extremely sensitive to midcourse budgetary changes. Startups are both easier and more demanding to run than traditional divisions; they require much less capital overall, but that capital must be absolutely secure from tampering.

Experimenting with autonomy: startup teams need complete autonomy to develop and market new products within their limited mandate. They have to be able to conceive and execute experiments without having to gain an excessive number of approvals. They have to be able to build and ship actual functioning products and services, not just prototypes. Handoffs and approvals slow down the build-measure-learn feedback loop and inhibit both learning and accountability. Without the ability to experiment in a more agile manner, a company will suffer the innovators dilemma; ever-higher profits and margins year after year until the business suddenly collapse.

Rapid iteration: The sandbox also promoted rapid iteration. When people have a chance to see a project through from end to end and the work is done in small batches and delivers a clear verdict quickly, they benefit from the power of feedback. By making the sandbox small, the sandbox method allows teams to make cheap mistakes quickly and start learning.

Operational excellence: In most cases, the product will attract copycats and imitators. Once the market for the new product is well established, procedures become more routine. To combat inevitable commoditization of the product in its market, line extensions, incremental upgrades, and new forms of marketing are essential. In this phase, operational excellence takes on a greater role, as an important way to increase margins is o lower costs.

The innovation sandbox

The challenge here is to create a mechanism for empowering innovation teams out in the open. One way is to create a sandbox for innovation that will contain the impact of the new innovation but not constrain the methods of the startup team. Customers in the sandbox are considered real and the innovation team is allowed to attempt to establish a long term relationship with them. The innovation team should try to be cross functional and have a clear tem leader. It should be empowered to build market and deploy products or features in the sandbox without prior approval. It should be required to report on the success or failure of those efforts by using standard actionable metrics and innovation accounting.

Ideally, the sandbox will grow over time; that is, rather than move the team out of the sandbox and into the company's standard routines, there may be opportunities to enlarge the scope of the sandbox.

Working in the innovation sandbox is like developing startup muscles. At first, the team will be able to take on only modest experiments. The earliest experiments may fail to produce much learning and may lead to a scalable success. Over time, those teams are almost guaranteed to improve as long as they get the constant feedback of small batch development and actionable metrics and are held accountable to learning milestones.

Speed: It does not matter how fast we can build. It does not matter how fast we can measure. What matters is how fast we can get through the entire loop.

The lean startup as framework: Those who look to adopt lean startup as a defined set of steps or tactics will not succeed. In a startup situation, things constantly go wrong. Ultimately, the lean startups are a framework, not a blueprint of steps to follow. It is designed to be adapted to the conditions of each specific company. Rather than copy what others have done, techniques such as the five why's allow you to build something that is perfectly suited to your company.

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