The Lean Startup
by Eric Ries

startu

Key Summary

what's inside

20.   Building the Future

We believe that billion dollar companies will emerge out of Africa built by Africans. Our mission is to help entrepreneurs that will make this happen.

Introducing The Lean Startup

The Lean Startup - How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses - Eric Ries

Lean startup is one of the must-read book for startup founders.

Eric Ries argued new method for developing businesses and products based on his experience of working in several U.S. startups.

Ries claims that startups can shorten their product development cycles by adopting what he calls validated learning, hypothesis-driven experimentation, iterative product releases, as well as a number of counter-intuitive practices that shorten product development cycles.

The Lean Startup's overall claim is that if startups invest their time into iteratively building products or services to meet the needs of early customers, they can reduce the market risks and sidestep the need for large amounts of initial project funding and expensive product launches and failures.

This is the best way to penetrate the fog of uncertainty that plagues startups and helps them discover a successful path to a sustainable business.

This summary is a "cliffsnotes" version of the Lean Startup book. It is not meant to be taken as a replacement for the full book (which is a gem of a resource). Rather, this works best as an addition, something to help your memory hold on to the vital portions of the book.

The Lean Startup Method

There are five principles of the Lean Startup, which inform the three parts of this book

1. Entrepreneurs are everywhere. You don't have to work in a garage to be in a startup.

2. Entrepreneurship is management. A startup is an institution, not just a product, and so it requires a new kind of management geared towards its context of extreme uncertainty.

3. Validated learning. Startups exist not just to make stuff, make money, or even serve customers. They exist to learn how to build a sustainable business.

4. Build-Measure-Learn. The fundamental activity of a startup is to turn ideas into products, measure how customers respond, and then learn whether to pivot or persevere. The faster you get through this loop, the better your chance of success.

5. Innovation accounting. Improving entrepreneurial outcomes requires a new kind of accounting designed for startups and the people who hold them accountable.

PART ONE: VISION

Chapter 1: Start

Modern technology has given firms more production capacity than they know what to do with. More output, less jobs. Eric Reis argued that responsibility is owed to the elimination of waste. This is what led to the creation of lean thinking principles.

Lean thinking is a methodology for accelerating cycle times and quality through the elimination of waste. It achieves this by drawing on the knowledge and creativity of individual workers, shrinking batch sizes, just-in-time production and inventory control.

Unlike regular manufacturing processing, in the lean process, progress is measured through validated learning.

> *In traditional manufacturing, productivity is measured via the production of high-quality physical goods. In the lean startup, the focus is on figuring out the right thing to build – the thing customers want and will pay for – as quickly as possible.*

This is the dramatic paradigm shift that lean thinking offers startups.

This paradigm shift is built on a process called the build-measure-learn feedback loop. Instead of making a lot of assumptions, the build-measure-learn feedback loop enables startups to make constant adjustments on the go. They turn ideas into products, measure how customers respond, and then learn if and when to make a sharp turn - a pivot or persevere. Successful startup processes optimise for accelerating the feedback loop.

Chapter 2: Define

Let's define a bunch of terminologies as used in the book to provide a bit of context going forward.

Who is an Entrepreneur

From young visionaries with little backing and great ideas to seasoned visionaries within larger companies and the people who hold them accountable, entrepreneurs run the gamut of the entire startup ecosystem.

> *Prerequisites to be an entrepreneur include a strong vision for the future, and an appetite for risk taking.*

Entrepreneurs who operate inside an established organisation sometimes are called *"intrapreneurs"* because of the special circumstances that comes with building a startup within a larger company.

These intrapreneurs have much more in common with the rest of the community of entrepreneurs than most people believe.

What is a Startup

> *A startup is a human institution designed to create a new product or service under conditions of extreme uncertainty.*

Perhaps the most important part of this definition is what it omits.

It says nothing about size of the company, the industry, or the sector of the economy. Any company creating a new product or business under conditions of extreme uncertainty is a startup, whether working in a

government agency, a venture-backed company, a nonprofit, or a decidedly for-profit company with financial investors.

A startup is greater than the sum of its parts as it is an acutely human enterprise. The fact that a startup's product or service is a new innovation is also an essential part of the definition and a tricky part too.

What is a Product

Product is any source of value for the people who become customers. Anything those customers experience from their interaction with a company is considered part of that company's product.

This is as true of a grocery store as it is for an e-commerce website, a consulting service, or a nonprofit social service agency. In every case, the organisation is dedicated to uncovering a new source of value for customers and cares about the impact of its product on those customers.

Innovation Factory

An innovation factory is essentially a system that uses lean startup techniques to create disruptive innovations on a continuous basis. This is the only sustainable path for it to achieve long-term economic growth.

Culture and systems

Cultivate an atmosphere where teams to move and innovate at the speed of the experimentation. This is the kind of culture and system where the lean method can thrive.

Chapter 3: Learn

Validated Learning

Validated learning is the unit of progress for lean startups which shrinks the development process substantially especially in uncertain markets.

> *When you focus on figuring the right thing to build - the thing customers want and will pay for - you can adapt your startup's plans incrementally, inch by inch, minute by minute. Any effort that is not absolutely necessary for learning what customers want is to be eliminated.*

The process is rigorous as it attempts to demonstrate, with empirical evidence collected from real customers, valuable truths about a startup's present and future business prospects. It is more concrete, more accurate, and faster than market forecasting or classical business planning, because it is always based on positive improvements in the startup's core metrics.

It helps to treat your startup, regardless of the industry as a grand experiment.

The question is not "can this product be built?" but "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.

Measuring productivity, the lean way

In the lean startup, everything the startup does, - every product launch, every new feature or upgrade, every marketing campaign, everything - is an experiment designed to achieve validated learning. This way, they

systematically figure out the right things to build, i.e. the thing customers want and will pay for. Among the data the startup will acquire in this "grand experiment", one of the most significant is the Customer Insight

Customer Insight

Value is seen as providing benefits to the customer; anything else is waste.

In a traditional manufacturing business, customers don't care how the product is assembled, only that it works correctly.

But in a startup, the customer is an unknown. Yes, there are psychographics which account planning experts swear by, but the customer's real world reaction and interaction with the product - if and how they will use it - are still very much up in the air.

Here is an example.

When LG Nigeria launched a new air conditioning unit in Nigeria, it came coupled with a much publicized feature - mosquito repellant technology. Their initial strategy was to drive sales by touting the mosquito repellant feature. What they didn't envision was that their primary customers would buy it for other reasons entirely - affordable pricing and aftersales support. When LG discovered this, they adjusted their focus accordingly.

That insight provided a proper and fuller definition about their customer.

Chapter 4: Experiment

One of the most important lessons of the science is that if you are not ready to fail, you cannot learn.

Using the startup vision as a guide, entrepreneurs begin with a clear hypothesis about what is supposed to happen with their business in relation to the market.

Experimentation is encouraged because it is the only way to discover how to build a sustainable business.

Experiments with a negative outcome prove useful, perhaps more so than ones with positive outcomes, because they provide instruction and can inform 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 in this model are:

(a) **the value hypothesis** – test whether a product or service really delivers value to customers using it.

(b) **the growth hypothesis** – test new ways of acquiring new customers for a product or service.
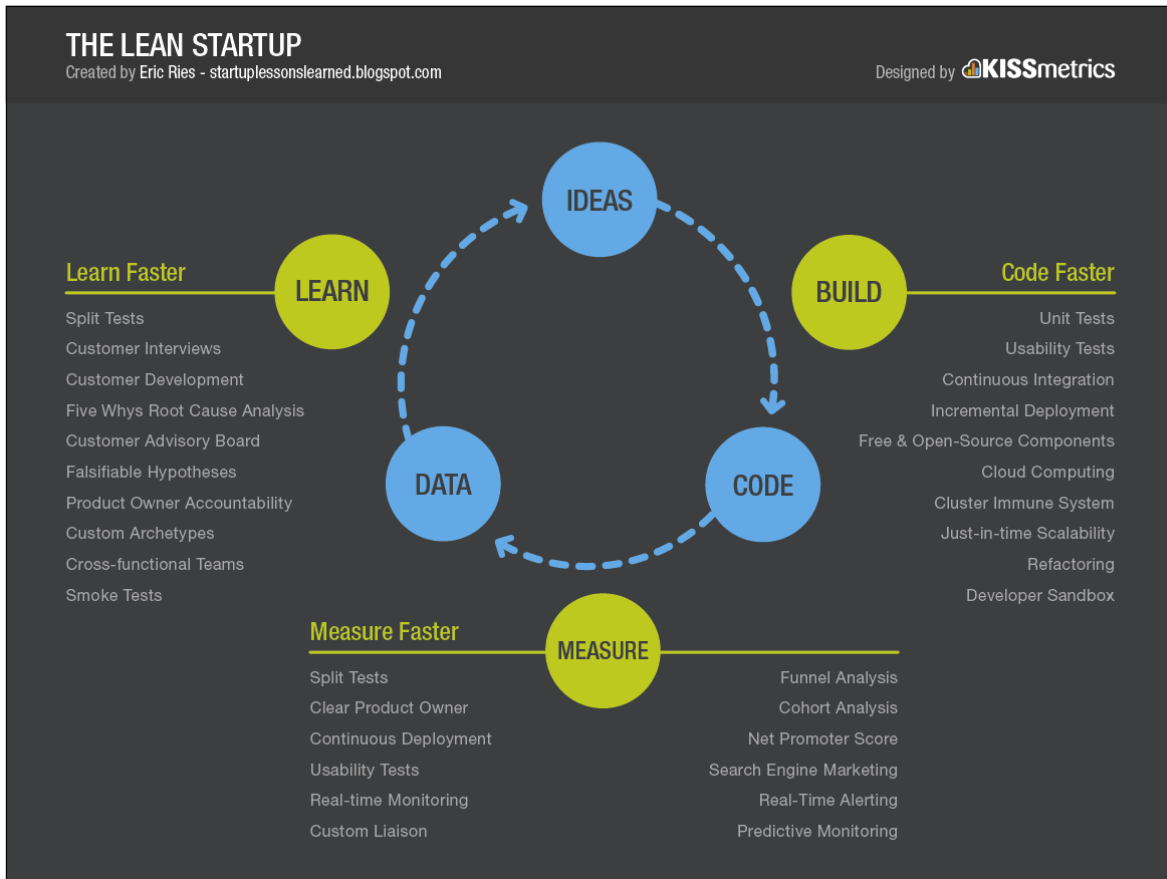
Here's a paradigm shift. Instead of a product manager insisting, "I want this", or the engineer saying "I am going to build that", the following four questions do a better job at working through product and service related decisions:

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?

Because, eventually, you'll realize that "success is not delivering a feature; success is learning how to solve the customer's problem"

PART TWO: STEER

The Feedback Loop

THE LEAN STARTUP
Created by Eric Ries - startuplessonslearned.blogspot.com

Designed by KISSmetrics

IDEAS

Learn Faster
LEARN

Split Tests
Customer Interviews
Customer Development
Five Whys Root Cause Analysis
Customer Advisory Board
Falsifiable Hypotheses
Product Owner Accountability
Custom Archetypes
Cross-functional Teams
Smoke Tests

BUILD

Code Faster
Unit Tests
Usability Tests
Continuous Integration
Incremental Deployment
Free & Open-Source Components
Cloud Computing
Cluster Immune System
Just-in-time Scalability
Refactoring
Developer Sandbox

DATA

CODE

Measure Faster
MEASURE

Split Tests
Clear Product Owner
Continuous Deployment
Usability Tests
Real-time Monitoring
Custom Liaison

Funnel Analysis
Cohort Analysis
Net Promoter Score
Search Engine Marketing
Real-Time Alerting
Predictive Monitoring

At its heart a startup is a catalyst that transforms ideas into products. The Build-Measure-Learn feedback loop is at the core of the Lean Startup model.

Once the feedback loop has been established as the company's process of producing solutions, the next thing on the agenda is figuring out ways to minimize the total time through the loop.

The Minimum Viable Product

A minimum viable product (MVP) is a version of the startup's product or service that enables a full turn of the build-measure-learn feedback loop. The catch is that this version requires the least amount of development

time and a minimum amount of effort.

This enables the startup to begin the process of learning as quickly as possible. Once the MVP is established, a startup can work on tuning the product or service. This involves measurement and learning and must include actionable metrics that can demonstrate cause and effect realities.

As with every experiment, setting expectations and possible outcomes will set the tone for the experiment itself. These expectations are what inform what is called Learning Milestones.

Learning Milestones are an alternative way to assess progress accurately and objectively. It usually involves answering questions like, "What have we learned about our product? About our customers? What features get used and what features don't?" etc.

It is important to develop definite ways of measuring progress, setting up milestones and prioritizing work. This may be boring but it improves entrepreneurial outcomes and holds innovators accountable.

Chapter 5: Leap

Startup Strategy

For startups, the purpose of strategy is to help the team figure out the right questions to ask.

> *Assumptions are the entrepreneur's way of asking questions and testing them is his way of figuring out answers.*

Therefore, the first challenge for an entrepreneur is to build an organisation that can test assumptions systematically. The second challenge is to subject the assumptions to rigorous testing without losing sight of the company's overall vision.

Every business plan begins with a set of assumptions. Because the assumptions haven't proven to be true and in fact are often erroneous, the goal of a startup's early efforts should be to test them as quickly as possible.

These assumptions, called *leap-of-faith assumptions* are the riskiest elements of a startup plan. They form the parts of your strategy that everything else depends on.

> *The two most important assumptions which you'll be testing are the value hypothesis and the growth hypothesis.*

These are the roots from which other variables sprout which in turn control the startup's engine of growth. Every iteration of a startup's product or service is an attempt to rev up this engine to see how it responds. Will the response be positive or negative?

Example of a leap of faith. IrokoTV's leap of faith was that people would pay for access to Nollywood movies online. Efritin's leap of faith was that Nigerians would be willing to meet strangers online and sell them stuff in person.

A startup's earliest strategic plans are likely to be a hunch and that is a good thing. To translate those instincts into data, entrepreneurs must, in Steve Blank's famous phrase, *'get out of the building and start learning'*. Or *Genchi Gembutsu* meaning "go and see for yourself".

> *Startup's business strategy should be based on deep firsthand understanding of their customers.*

Until you have seen something for yourself firsthand you cannot be sure you really understand any part of the business problem.

The need for external customer data

The facts needed about the customer exists only outside the building. This demands spending an amount of time interacting with potential customers.

The purpose of this external customer data is to confirm whether or not your leap-of-faith assumptions are founded in reality i.e. that customers had a significant problem worth solving.

Interacting with the customer humanises the proposed target customer and helps to draw up an accurate, true to life profile.

Chapter 6: Test

Startup entrepreneur's initial task is to build a minimum viable product (MVP) as quickly as possible

> *A Minimum Viable Product can be defined as anything that helps entrepreneurs start the process of learning as quickly as possible.*

Its entire purpose is to empirically test leap-of-faith assumptions using the least amount of effort and development time 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 resources.

MVPs can also be designed to answer product design and technical questions. The MVP is usually the first step on a journey of learning.

Down that road – after many iterations – you may learn that some elements of your product or strategy are flawed which is an indication that it is time to pivot.

Your MVP can take many different forms depending on the assumptions you need to validate. IrokoTV's MVP was a YouTube page with hundreds of Nollywood videos.

An MVP is a barebones product or service. So remove any feature, process or effort that does not contribute directly to the learning you seek.

A low quality MVP can act in service of building a great high-quality product.

> *"If you're not embarrassed by your MVP, you spent too much time on it" Reid Hoffman, founder of LinkedIn*

Keep the feedback channel open and welcome reactions to mockups, prototypes and simulations.

The Concierge MVP

The difference between this and a normal MVP is that it is a personalised service, i.e. you manually guide your customer through the product.

The concierge version of an MVP requires manually taking care of initial customers with the attention that a personal concierge would provide at an upscale hotel.

While the final product will probably be automated, this personal approach allows you to experiment and learn about the validity of your hypotheses without investing time and money in development.

In short, it's a short term solution and its goal is to test the company's growth model. A poor growth model has trapped many companies, leaving them with a small profitable business when a pivot might lead to more significant growth.

This is not to be mistaken for Wizard of Oz testing. In Wizard of Oz testing, customers believe they are interacting with the actual product, but behind the scenes human beings are doing the work.

A very inefficient process, but easy to build on a micro scale.

Early adopters

These are the member of a minority group, comprising about 14% of the population that is always the first to try new ideas, processes, goods and services. Before new products can be sold successfully to the mass market, they have to be sold to the early adopters.

What's peculiar about them is their psychology. They are comfortable, and

sometimes prefer, an 80% finished product or service. They use their imagination to fill in missing features in a product. Their preference is based on the drive to be the first to use or adopt a new product or technology.

> *If your product is a 100% done, early adopters may feel they are too late to your party.*

Most business philosophies focus on producing high-quality experiences for customers as a primary principle. This makes sense in a company that already knows what attributes of the product the customer perceives as worthwhile.

But at a startup? This is a risky assumption. Startups usually are still learning who the customer is, and so do not know what his or her definition of quality is.

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. Winning relies solely on learning faster than anyone else.

Chapter 7: Measure

A startup's job is to:

1. Rigorously measure where it is at every point, confronting the hard truths that assessment reveals

2. Concoct experiments to learn how to move the current KPIs closer to the ideal KPIs projected in the business plan.

Innovation accounting

Startups need a disciplined, systematic approach to measuring and recording progress and validated learning. This is called innovation accounting, an alternative method of accounting that begins by turning the leap-of-faith assumptions into a quantified financial model.

Innovation Accounting works in three steps:

1. Use of an MVP to accumulate real data on the company's current performance

2. Tuning the engine from the current baseline toward the ideal

3. Make an important call - to pivot or to persevere. This is based on outcome of all the micro changes and product optimizations made when "tuning the engine".

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

Establishing baseline metrics

An MVP allows a startup to fill in real baseline data in its growth model, such as conversion rates, sign up and trial rates, customer lifetime value etc. This data will prove invaluable as it forms the foundation for learning

about customers and their reactions to a product.

Once the baseline has been established, the startup can work toward the second learning milestone - tuning the engine. Every product development, marketing or any other initiative that a startup undertakes should be targeted at improving one of the drivers of it growth models. This is called tuning the engine.

If tuning activities are not having desired effect on the baseline, that is a sure sign that it is time to pivot.

When a startup 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 engine-tuning activities yield more positive results after the pivot than before.

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

Pivot or Persevere

Everything that has been discussed so far is a prelude to a seemingly simple question: are we making sufficient progress to believe that our original strategic hypothesis is correct, or do we need to make a major change?

Poor quantitative results force us to declare failure and create the motivation, context, and space for more qualitative research and investigations. These investigations produce new assumptions – new hypotheses – to be tested, leading to a possible pivot. Each pivot unlocks new opportunities for further experimentation, and the cycle repeats. With time, startups get to master this simple rhythm - establish the baseline, tune the engine, decide whether to pivot or persevere.

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, it takes into account the performance of each group of customers that comes into contact with the product independently. Each group is called a cohort.

Lean Startup Metrics

Split test benefits: split tests more often than not, 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.

In order to avoid collecting data which is useless to the startup i.e. doesn't aid validated learning, metrics must have three properties usually referenced as the three As 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, the startup is better able to learn from its actions. Human beings are innately talented learners when given a clear and objective assessment.

Accessible metrics: a big mistake is spending your energy learning how to use data to get what you want rather than treating data as genuine feedback to guide future actions. Remember that your metrics are going to be used by actual people on your team. The last thing you want are metrics that people don't understand. Everyone must understand the reports.

Instead of describing new features with technical terms, try to write user stories that described the feature from the point of view of the customer.

Auditable metrics: unsure that the data is credible to employees. Transparency is the name of the game here.

Chapter 8: Pivot or Persevere

What is a Pivot?

> *Pivot is a structured course correction designed to test a new fundamental hypothesis about the product, strategy and engine of growth.*

A pivot requires the startup to keep one foot rooted in learnings they have acquired so far, while making a fundamental change in strategy in order to seek even greater validated learning.

Interestingly, if you ask most entrepreneurs who have decided to pivot, they will tell you that they wish they had made the decision sooner than they did.

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.

The Land of the Living Dead

There is an unfortunate situation when a company is having positive results that are just enough to keep it alive and running. It is also not meeting the lofty expectations of its founders and investors.

That startup is said to have waded into the land of the living dead. As an analogy, picture a vehicle running in place halfway up a hill.

Which is why it is important to have learning milestones. The goal of

creating learning milestones is not to make the decision easy; rather 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 a startup's runaway is how many pivots it has left: the number of opportunities it has to make a fundamental change to its business strategy.

A lean startup sees its runaway - the time until it runs out of money - not in months or years, but in the number of cycles it has.

The danger of vanity metrics

Vanity metrics cause 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 persevere.

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: a single feature in a product becomes the whole product, highlighting the value of "focus" and "minimum viable product," delivered quickly and efficiently.

Zoom-out pivot: in the reverse situation, a single feature is insufficient to support a customer set, so what was considered the whole product becomes a single feature of a much larger product.

Customer segment pivot: a product attracts real customers but not the ones in the original vision. Although it solves an actual problem, it must be

positioned and optimized for a more appreciative segment.

Customer need pivot: early customer feedback indicates that the problem solved by the product is not very important, necessitating a repositioning or the development of a completely new product.

Platform pivot: an application is changed to a platform, or vice versa.

Value capture pivot: the monetisation or revenue model is tweaked to capture value, with corresponding changes in business, product, and marketing strategies.

Engine of growth pivot: a startup selects one of three primary growth engines — the viral, sticky, or paid growth models — to affect the speed and profitability of growth.

Channel pivot: a company selects unique pricing, feature, and competitive positioning adjustments to deliver its product to customers.

Technology pivot: a startup achieves the same solution using a completely different technology that can provide superior price and/or performance to improve competitive posture.

PART THREE: ACCELERATE

3 Engines of Growth

In Part Three, Ries looks at techniques that allow Lean Startups to develop organisational structure without sacrificing speed and agility.

Ries believes that lethargy and bureaucracy are not the inevitable fate of companies as they achieve maturity and that with the proper foundation, Lean Startups can grow to become lean enterprises whilst maintaining their agility, learning orientation and culture of innovation.

> *Organisational structures are a startup's major weapon against the extreme uncertainty that defines startups in general.*

The critical first question for any lean transformation is about value. Which activities create value and which are a form of waste? Understanding this distinction makes lean techniques become effective in eliminating waste and increasing the efficiency of the activities creating value.

Value in a startup is not about the creation of stuff, but rather validated learning about how to build a sustainable business.

Startups validate learning by asking questions: 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?

These are the questions that should inform the establishment of structures in the company.

Just-in-time: Just as lean manufacturing has adopted 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:

- Stickiness
- Virality
- Price

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.

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.

Imagine you are stuffing envelopes. There are two methods:

Method 1: Fold all of the letters first, then stuff the envelopes, then stamp the envelopes.

Method 2: Stuff and stamp each envelope one at a time.

The first method seems the most effective way, but studies show that method 2 will get the job done faster.

Method 1 is called *single-piece flow* in lean manufacturing. It works because our intuition doesn't take into account the extra time required to sort, stack and move around piles of half complete envelopes. Method 2 is called *small batch* processing. It seems counterintuitive but its a superior and more efficient process.

Even if the amount of time that each process took was exactly the same, the small batch production approach still would be superior.

What if after preparing all invitations, you discover that they don't fit in the envelopes? Folding them one by one - small batches - prevents this pitfall.

Launching a product is very similar. 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.

With the large-batch approach, we wouldn't find out the problems until nearly the end and will also require a restart.

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.

One of Toyota's innovations was the andon chord. A device mechanism used in Toyota production plants that signaled the presence of a defect in the assembly process and directed all attention to fixing it before work can continue. As the team got better and made more changes without introducing new problems, the team sped up. A failing test provides a natural feedback mechanism, slowing the team down when going too fast.

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:

Hardware becoming software

At their core, the latest phones and tablet computers are little more than a screen connected to the internet. Almost all of their value is determined by their software. Products and solutions built out of software can be modified much faster than a physical or mechanical device.

Fast production changes

Many assembly lines are setup to allow new products coming off the line to be customized completely without sacrificing quality or cost-effectiveness. Historically, this has been used to offer the customer a bevy of choices of product, but in the future, this capability will allow the designers of products to get much faster feedback about new iterations of their products.

3D printing and rapid prototyping tools

New technologies are allowing entrepreneurs to build small batches of products, cheaper, faster yet, without skimping on quality.

Large batches tend to grow over time and acquire a life of their own. Moving the batch forward often results in additional work, rework, delays, and interruptions, which causes everyone to do work in ever-larger batches, trying to minimize this overhead. This is called the large-batch death spiral. Small batch continuous deployment will avoid this.

The takeaway is that, 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 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 in the 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.

Experiment early: test the hypothesis as soon as it is formulated. The product development team should hit the ground running with designs able to execute this experiment using the smallest batch size that will get the job done.

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

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

When people love your product, they'll tell other people about it. A great product has an inherent level of growth that is predicated on the satisfied customers' enthusiasm for the products. Meet their needs, solve their problems and you'll have a product/service evangelist on your hands.

2. As a side effect of products usage

Simply by using a product, customers advertise the startup's product to people around them. For example, apps, fashion and lifestyle products, luxury goods and so on.

3. Through funded advertising

Sometimes you have to pay to expose your product to media consumers. As long as the cost of acquiring a new customer is less than the revenue that customer generates, the excess - profit - can be used to acquire more customers. The more profit, the faster the growth. Analytical tools that can track effectiveness of ad campaigns are invaluable.

4. Through repeat purchase or use

Many products need to be bought repeatedly. Newspaper subscriptions, IrokoTV and internet subscriptions are good examples of this. When you have a product that requires repeated purchases, you only have to obtain a small number of new customers to keep growing. These kinds of products/services are the first to foster brand loyalty .

Chapter 11: Adapt

Adaptive organisations

An adaptive organisation is one that automatically adjusts its process and performance to current conditions. Although the primary changes that are required in an adaptive organisation are in the mindset of its employees, changing the culture is not sufficient.

> *One of the most important discoveries of the lean manufacturing movement is that 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 on the other hand involves slowing down production to fix problems that waste time.

The Five Why's

At the root of every seemingly technical problem is a human problem. The Five Why´s provides an opportunity to discover what that human problem might be. The are a way of forming five consecutive questions to identify and isolate the cause of any given problem.

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)

Note that in this relatively simple example, the root cause moves away from a technical fault (a blown fuse) and toward a human error (someone forgot to attach a strainer). This is completely typical of most problems that startups face no matter what industry they are 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 show up, the more the startup invests in solutions to those problems. Eventually, these investments in infrastructure and process will begin to pay off and the severity and number of crises reduces significantly and the team speeds up again.

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

Waterfall project methodology: is a completely inappropriate system for today's rapidly changing business environment. It is a linear, large batch system that goes against the principles of lean startups.

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Chapter 12: Innovate

Startups requires three structural attributes for optimal functionality:

- Scarce but secure resources,
- Independent authority to develop their business,
- A personal stake in the outcome. This stake need not be financial, it can be credit or a sense of ownership.

The parent organization has 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

Startups are extremely sensitive to midcourse budgetary changes, and such, a surplus budget is as harmful as one that is too little.

Startups are easier to run than traditional divisions. They are also more demanding. The ease comes from the fact that they require much less capital overall than traditional divisions. The demanding aspect is based on the fact that, the sensitivity of the startups demands that available capital must be absolutely secure from tampering.

Startup 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 go through too much bureaucracy. They have to be empowered to build and ship actual functioning products and services, not just prototypes.

Handoffs and approvals slow down the build-measure-learn feedback loop

and stifle both learning and accountability.

> *Without the ability to experiment in a more agile manner, a company will suffer the Innovator's Dilemma; ever-higher profits and margins year after year until the business suddenly collapse.*

The innovation sandbox

To catalyse innovation, one could create a sandbox for innovation, one that will contain the impact of the new innovation but not restrain the methods of the startup team.

Customers in the sandbox are considered real and the innovation team is allowed to do their thing with the goal of establishing a long term relationship with them.

The innovation team should try to be cross functional and have a clear team 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.

Initially, the team's experiments will be modest at most. These experiments may fail to produce much learning and may not lead to a scalable success. Over time though, 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.

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, the benefits of feedback are massive. 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 commoditisation of the product in its market, the startup must engage new forms of marketing as well as line extensions and incremental upgrades. In this phase, operational excellence is emphasised as an important way to increase margins and lower costs.

The lean startup as framework

Those who look to adopt lean startup as a stringent set of steps or tactics will not succeed. In a startup situation, things constantly go off-course and off-script.

Ultimately, the lean startup is a framework, not a blueprint of steps to follow. It is designed to be adapted to the circumstances surrounding each specific startup.

What follows at IrokoTV may not apply at Afrostream or at BRCK. 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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We believe that billion dollar companies will emerge out of Africa built by Africans. Our mission is to help entrepreneurs that will make this happen.

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