

THE **LEAN** SERIES

Alistair Croll & Benjamin Yoskovitz

LEAN ANALYTICS

Use Data to Build a
Better Startup Faster

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THE LEAN SERIES

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this book to outgrow you.”**

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“...the missing piece of Lean Startup...”

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“This book is a huge gift to our industry.”

—Zach Nies, Chief Technologist, Rally Software

“The edge you need.”

—Julien Smith, *New York Times* bestselling author of *Trust Agents* and *The Flinch*

**“As useful for product managers at today’s multi-
billion dollar companies as it is for entrepreneurs.”**

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“Alistair and Ben have written a much-needed dose of reality.”

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and creator of the Startup Revolution series of books

“...this book shows you how.”

—Kevin Weil, Director of Product, Revenue, Twitter

**“...Croll and Yoskovitz extend our understanding of Lean management by
bringing rigorous measurement techniques to a new frontier.”**

—Thomas Eisenmann, Howard H. Stevenson Professor of
Business Administration, Harvard Business School

“Let Alistair and Ben show you how to get to startup nirvana smarter!”

—Avinash Kaushik, Author, Blogger, Digital Marketing Evangelist

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Praise for *Lean Analytics*

“Your competition will use this book to outgrow you.”

Mike Volpe—CMO, Hubspot

“Everyone has data, the key is figuring out what pieces will improve your learning and decision making. Everyone knows they need metrics, but finding ones that are specific, measurable, actionable, relevant, and timely is a huge challenge. In Lean Analytics, Ben and Alistair have done a masterful job showing us how to use data and metrics to peer through the haze of uncertainty that surrounds creating new businesses and products. This book is a huge gift to our industry.”

Zach Nies—Chief Technologist, Rally Software

“Lean Analytics is the missing piece of Lean Startup, with practical and detailed research, advice and guidance that can help you succeed faster in a startup or large organization.”

Dan Martell—CEO and Founder, Clarity

“Entrepreneurs need their own reality distortion field to tilt at improbable windmills. But that delusion can be their undoing if they start lying to themselves. This book is the antidote. Alistair and Ben have written a much-needed dose of reality, and entrepreneurs who ignore this data-driven approach do so at their peril.”

Brad Feld—Managing Director, Foundry Group; Co-founder, TechStars; and Creator, the Startup Revolution series of books

“Lean Analytics will take you from Minimum Viable Product to Maximally Valuable Product. It’s as useful for product managers at today’s multi-billion dollar companies as it is for entrepreneurs who aspire to build those of tomorrow.”

John Stormer—Senior Director of New Products, Salesforce

“The bad news is, there will always be people out there smarter than you. The good news is, Alistair and Ben are those guys. Using Lean Analytics will give you the edge you need.”

Julien Smith—*New York Times* bestselling author of
Trust Agents and *The Flinch*

“At Twitter, analytics has been key to understanding our users and growing our business. Smart startups need to embrace a data-driven approach if they’re going to compete on a level playing field, and this book shows you how.”

Kevin Weil—Director of Product, Revenue, Twitter

“A must-read on how to integrate analytics deep into an emerging product, and take the guesswork out of business success.”

Peter Yared—CTO/CIO, CBS Interactive

“Lean Analytics is a detailed explanation of the data-driven approach to running a business. Thoughtfully composed by two experienced entrepreneurs, this is a book I will make part of my training materials at Sincerely, Inc., and all future companies.”

Matt Brezina—Founder, Sincerely, Inc., and Xobni

“Pearson’s Law states, ‘That which is measured improves.’ Croll and Yoskovitz extend our understanding of Lean management by bringing rigorous measurement techniques to a new frontier: the earliest stages of new product development and launch. If entrepreneurs apply their frameworks, they should see reduced waste and big improvements in startup success rates.

Thomas Eisenmann—Howard H. Stevenson Professor of Business Administration, Harvard Business School

“This isn’t just a book about web analytics or business analytics—it’s a book about what organizations should and shouldn’t measure, and how to transform that data into actionable practices that will help them succeed. Alistair and Benjamin have compiled a robust set of case studies that illustrate the power of getting analytics right, and, if taken to heart, their tips and takeaways will make entrepreneurs, marketers, product and engineering folks better at what they do.”

Rand Fishkin—CEO and Co-founder, Moz

“I bet you’d never imagined that success depends on your ability to fail. Fail faster, fail forward. And the secret to that success is your ability to learn and iterate quickly using data. Qualitative and quantitative. Let Alistair and Ben show you how to get to startup nirvana smarter!”

Avinash Kaushik—Author, *Web Analytics 2.0*

“Lean Analytics shows you how to move insanely fast by getting your metrics to tell you when you’re failing and how to do something about it. Tons of honest, meaningful advice—a must-read for Founders who want to win.”

Sean Kane—Co-founder, F6S and Springboard Accelerator

“There are only two skills that are guaranteed to reduce the chances of startup failure. One is clairvoyance; the other is in this book. Every entrepreneur should read it.”

Dharmesh Shah—Founder and CTO, HubSpot

“First you need to build something people love. Then you need to attract and engage people to find and use it. Having a deep understanding of your data and metrics is fundamental in achieving this at scale. Lean Analytics is a detailed, hands-on approach to learning what it means to track the right metrics and use them to build the right products.”

Josh Elman—VC, Greylock Partners

“Lean Analytics is the natural evolution of the Lean Startup movement, which began as a humble blog and has blossomed into a global movement. This book delivers concrete, hard-won insights spanning all business models and company stages. It’s a must-read for any business leader who’s looking to succeed in an increasingly data-driven world.”

Mark MacLeod—Chief Corporate Development Officer, FreshBooks

“A vital part of the founder’s toolkit. If you’re starting a company, you need to read this.”

Mark Peter Davis—Venture Capitalist and Incubator

“Lean Analytics is packed with practical, actionable advice and engaging case studies. You need to read this book to understand how to use data to build a better business.”

Paul Joyce—Co-founder and CEO, Geckoboard

“Get this book now. Even if you’re only thinking about starting something, Lean Analytics will help. It’s a dose of tough love that will greatly increase your chances of survival and success. Start off on the right foot and read this book; you won’t regret it.”

Dan Debow—Co-CEO and Founder, Rypple; SVP, Work.com

“Stop thinking and just buy this book. It’s the secret sauce. If you’re an entrepreneur, it’s required reading.”

Greg Isenberg—CEO, fiveby.tv; Venture Partner, Good People Ventures

“This is a treasure for the Lean Startup movement—a dense collection of actionable advice, backed by real case studies. Lean concepts are easy to understand but often difficult to put into practice, but Lean Analytics makes the path clear and gives you the tools to measure your progress.”

Jason Cohen—CEO, WP Engine

“With this book, Alistair and Ben bring a framework and lessons together for the thousands of new startups looking to do things fast and right. Time is everything as markets get continuously more efficient, and even over-capitalized quickly. Lean Analytics is great learning material for this generation of web and mobile startups.”

Howard Lindzon—Co-founder and CEO, Stocktwits; Managing Partner, Social Leverage; Creator, Wallstrip

“Alistair and Ben are trusted leaders in their field already. With this book, they let you see how they got there.”

Chris Brogan—CEO and President, Human Business Works

“With Lean Analytics, Ben and Alistair have, for the first time that I’ve seen, put real case studies and numbers together in an easy-to-read form, with actual successful startups as examples. These insights are hugely powerful for both early-stage founders and those at a later stage. It’s one of the few books that I know I’ll be going back to time and time again.”

Joel Gascoigne—Founder and CEO, Buffer

“Daniel Patrick Moynihan famously said, ‘Everyone is entitled to his own opinion, but not to his own facts.’ This is never more true than in business.

One of the best things about working with Alistair Croll is how he cuts through opinion with facts, turning marketing into learning, and product development into a conversation with customers.”

Tim O’Reilly—Founder and CEO, O’Reilly Media, Inc.

“Not more numbers, but actionable metrics. In Lean Analytics, Alistair and Ben teach you how to cut through the fog of data and focus on the right key metrics that make the difference between succeeding and failing.”

Ash Maurya—Founder and CEO, Spark59 and WiredReach; author, *Running Lean*

“We live in a day and age where data and analytics can (finally!) be used by anyone and everyone. If you’re not leveraging the power of data and analytics to figure out what works and what doesn’t, then you’re working in the dark. Listen to Alistair and Ben: they’re not only the light switch to get you out of the dark, but they know how the entire power plant runs. I can’t think of two people I would turn to quicker if I had a startup and wanted to leverage the power of data to make my business a success.”

Mitch Joel—President, Twist Image; author, *Ctrl Alt Delete*

“Many entrepreneurs are overwhelmed by data they don’t know what to do with and by metrics that aren’t helpful in running their business. Lean Analytics tells important stories from many businesses—with real data—to provide a framework to define the right metrics and use them to execute better. Highly recommended!”

Mike Greenfield—Founder, Circle of Moms and Team Rankings

“Lean Analytics helps you cut through the clutter and show you how to measure what really matters.”

Rajesh Setty—Serial Entrepreneur and Business Alchemist, rajeshsetty.com

“I’ve heard way too many early entrepreneurs (myself included!) bristle at letting data drive product design. ‘It’s my product—how could users know better than me?’ This book, with its wealth of relatable stories and examples, lays out in clear terms exactly how and why analytics can help. It’s a shortcut to a lesson that can otherwise take painfully long to learn.”

Dan Melinger—Co-founder and CEO, Socialight

“Ben and Alistair are startup experts in their own right, but they really went out of their way to solicit advice and input from as many other real-world practitioners as possible when writing this book. Their effort really pays off—Lean Analytics is chock-full of high-quality techniques for building your startup, put in terms that even a first-time entrepreneur can understand.”

Bill D’Alessandro—Partner, Skyway Ventures

*“Are you in search of what to measure, how to measure it, and
how to act on that data in order to grow your startup?
Lean Analytics gives you exactly that.”*

Rob Walling—Author, *Start Small, Stay Small: A Developer’s
Guide to Launching a Startup*

*“You need this book if you’re an entrepreneur looking to
get an edge with your data.”*

Massimo Farina—Co-founder, Static Pixels

*“Every entrepreneur’s goal is to follow the most efficient path to success,
but you rarely know that path going in. Lean Analytics demonstrates the
process of leveraging very specific metrics to find your business’s unique
path, in a way that new entrepreneurs and veterans alike can understand.”*

Ryan Vaughn—Founder, Varsity News Network

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Startup Faster

Alistair Croll
Benjamin Yoskovitz

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Lean Analytics

by Alistair Croll and Benjamin Yoskovitz

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[CW]

For Riley, who's already mastered the art of asking "why" five times.

—Alistair

*For my brother, Jacob, who passed away too soon, but inspires me still to
challenge myself and take risks.*

—Ben

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Foreword

For some reason, the Lean Startup movement has proven excellent at producing bumper stickers. Odds are, if you're reading this, you know some of our most popular additions to the business lexicon: pivot, minimum viable product, Build-Measure-Learn, continuous deployment, or Steve Blank's famous "get out of the building." Some of these you can already buy on a t-shirt.

Given that the past few years of my life have been dedicated to promoting these concepts, I am not now trying to diminish their importance. We are living through a transformation in the way work is done, and these concepts are key elements of that change. The Lean Series is dedicated to bringing this transformation to life by moving beyond the bumper stickers and diving deep into the details.

Lean Analytics takes this mission to a whole new level.

On the surface, this new world seems exciting and bold. Innovation, new sources of growth, the glory of product/market fit and the agony of failures and pivots all make for riveting drama. But all of this work rests on a foundation made of far more boring stuff: accounting, math, and metrics. And the traditional accounting metrics—when applied to the uncertainties of innovation—are surprisingly dangerous. We call them vanity metrics, the numbers that make you feel good but seriously mislead. Avoiding them requires a whole new accounting discipline, which I call "innovation accounting."

Trust me, as an entrepreneur, I had no interest in accounting as a subject. To be honest, in far too many of my companies, the accounting was incredibly simple anyway: revenue, margins, free cash flows—they were all zero.

But accounting is at the heart of our modern management techniques. Since the days of Frederick Winslow Taylor, we have assessed the skill of managers by comparing their results to the forecast. Beat the plan, get a promotion. Miss the plan, and your stock price declines. And for some kinds of products, this works just fine. Accurate forecasting requires a long and stable operating history from which to make the forecast. The longer and more stable, the more accurate.

And yet who really feels like the world is getting more and more stable every day? Whenever conditions change, or we attempt to change them by introducing a truly new product, accurate forecasting becomes nearly impossible. And without that yardstick, how do we evaluate if we're making progress? If we're busy building the wrong product, why should we be proud to be doing it on time and on budget? This is the reason we need a new understanding of how to measure progress, both for ourselves as entrepreneurs and managers, as investors in the companies we fund, and the teams under our purview.

That is why an accounting revolution is required if we're to succeed in this new era of work. And Ben and Alistair have done the incredibly hard work of surveying the best thinking on the metrics and analytics, gathering in-depth examples, and breaking new ground in presenting their own frameworks for figuring out which metrics matter, and when. Their work collecting industry-wide benchmarks to use for a variety of key metrics is worth the price of admission all by itself.

This is not a theoretical work, but a guide for all practitioners who seek new sources of growth. I wish you happy hunting.

Eric Ries
San Francisco
February 4, 2013

Preface

The Lean Startup movement is galvanizing a generation of entrepreneurs. It helps you identify the riskiest parts of your business plan, then finds ways to reduce those risks in a quick, iterative cycle of learning. Most of its insights boil down to one sentence: *Don't sell what you can make; make what you can sell.* And that means figuring out what people want to buy.

Unfortunately, it's hard to know what people really want. Many times, they don't know themselves. When they tell you, it's often what they think you want to hear.* What's worse, as a founder and entrepreneur, you have strong, almost overwhelming preconceptions about how other people think, and these color your decisions in subtle and insidious ways.

Analytics can help. Measuring something makes you accountable. You're forced to confront inconvenient truths. And you don't spend your life and your money building something nobody wants.

Lean Startup helps you structure your progress and identify the riskiest parts of your business, then learn about them quickly so you can adapt. *Lean Analytics* is used to measure that progress, helping you to ask the most important questions and get clear answers quickly.

* <http://www.forbes.com/sites/jerrymclaughlin/2012/05/01/would-you-do-this-to-boost-sales-by-20-or-more/>

In this book we show you how to figure out your business model and your stage of growth. We'll explain how to find the One Metric That Matters to you right now, and how to draw a line in the sand so you know when to step on the gas and when to slam on the brakes.

Lean Analytics is the dashboard for every stage of your business, from validating whether a problem is real, to identifying your customers, to deciding what to build, to positioning yourself favorably with a potential acquirer. It can't force you to act on data—but it can put that data front and center, making it harder for you to ignore, and preventing you from driving off the road entirely.

Who This Book Is For

This book is for the entrepreneur trying to build something innovative. We'll walk you through the analytical process, from idea generation to achieving product/market fit and beyond, so this book both is for those starting their entrepreneurial journey as well as those in the middle of it.

Web analysts and data scientists may also find this book useful, because it shows how to move beyond traditional “funnel visualizations” and connect their work to more meaningful business discussions. Similarly, business professionals involved in product development, product management, marketing, public relations, and investing will find much of the content relevant, as it will help them understand and assess startups.

Most of the tools and techniques we'll cover were first applied to consumer web applications. Today, however, they matter to a far broader audience: independent local businesses, election managers, business-to-business startups, rogue civil servants trying to change the system from within, and “intrapreneurs” innovating within big, established organizations.*

In that respect, *Lean Analytics* is for anyone trying to make his or her organization more effective. As we wrote this book, we talked with tiny family businesses, global corporations, fledgling startups, campaign organizers, charities, and even religious groups, all of whom were putting lean, analytical approaches to work in their organizations.

How This Book Works

There's lots of information in this book. We interviewed over a hundred founders, investors, intrapreneurs, and innovators, many of whom shared

* An intrapreneur is an entrepreneur within a large organization, often fighting political rather than financial battles and trying to promote change from within.

their stories with us, and we've included more than 30 case studies. We've also listed more than a dozen best-practice patterns you can apply right away. And we've broken the content into four big parts.

- Part I focuses on an understanding of Lean Startup and basic analytics, and the data-informed mindset you'll need to succeed. We review a number of existing frameworks for building your startup and introduce our own, analytics-focused one. This is your primer for the world of Lean Analytics. At the end of this section, you'll have a good understanding of fundamental analytics.
- Part II shows you how to apply Lean Analytics to your startup. We look at six sample business models and the five stages that every startup goes through as it discovers the right product and the best target market. We also talk about finding the One Metric That Matters to your business. When you're done, you'll know what business you're in, what stage you're at, and what to work on.
- Part III looks at what's normal. Unless you have a line in the sand, you don't know whether you're doing well or badly. By reading this section, you'll get some good baselines for key metrics and learn how to set your own targets.
- Part IV shows you how to apply Lean Analytics to your organization, changing the culture of consumer- and business-focused startups as well as established businesses. After all, data-driven approaches apply to more than just new companies.

At the end of most chapters, we've included questions you can answer to help you apply what you've read.

The Building Blocks

Lean Analytics doesn't exist in a vacuum. We're an extension of Lean Startup, heavily influenced by customer development and other concepts that have come before. It's important to understand those building blocks before diving in.

Customer Development

Customer development—a term coined by entrepreneur and professor Steve Blank—took direct aim at the outdated, “build it and they will come” waterfall method of building products and companies. Customer development is focused on collecting continuous feedback that will have a material impact on the direction of a product and business, every step of the way.

Blank first defined customer development in his book *The Four Steps to the Epiphany* (Cafepress.com) and refined his ideas with Bob Dorf in *The Startup Owner's Manual* (K & S Ranch). His definition of a startup is one of the most important concepts in his work:

A startup is an organization formed to search for a scalable and repeatable business model.

Keep that definition in mind as you read the rest of this book.

Lean Startup

Eric Ries defined the Lean Startup process when he combined customer development, Agile software development methodologies, and Lean manufacturing practices into a framework for developing products and businesses quickly and efficiently.

First applied to new companies, Eric's work is now being used by organizations of all sizes to disrupt and innovate. After all, Lean isn't about being cheap or small, it's about eliminating waste and moving quickly, which is good for organizations of any size.

One of Lean Startup's core concepts is *build→measure→learn*—the process by which you do everything, from establishing a vision to building product features to developing channels and marketing strategies, as shown in Figure P-1. Within that cycle, *Lean Analytics* focuses on the *measure* stage. The faster your organization iterate through the cycle, the more quickly you'll find the right product and market. If you measure better, you're more likely to succeed.

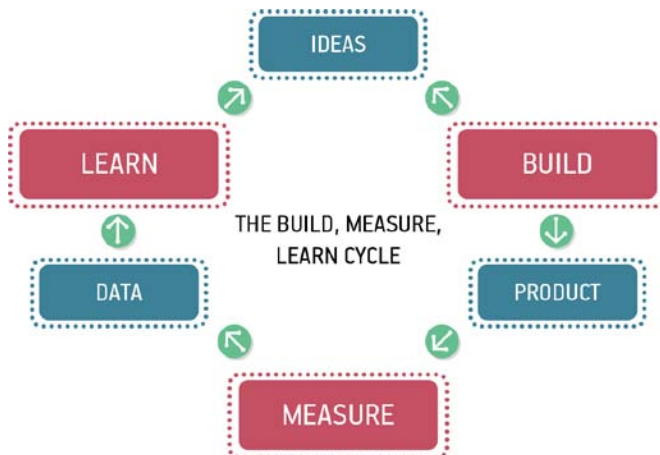


Figure P-1. The build→measure→learn cycle

The cycle isn't just a way of improving your product. It's also a good reality check. Building the minimum product necessary is part of what Eric calls *innovation accounting*, which helps you objectively measure how you're doing. Lean Analytics is a way of quantifying your innovation, getting you closer and closer to a continuous reality check—in other words, to reality itself.

We'd Like to Hear from You

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Thanks and Acknowledgments

This book took a year to write, but decades to learn. It was more of a team effort than most, with dozens of founders, investors, and innovators sharing their stories online and off. Our personal blog readers, as well as the hundreds of subscribers to our Lean Analytics blog who gave us feedback, deserve much of the credit for the clever parts; we deserve all of the blame for the bad bits.

Mary Treseler was the voice of our readers and called us out when we strayed too far into jargon. Our families stayed amazingly patient and helped with several rounds of reading and editing. We sent early copies of critical chapters to reviewers, who verified our assumptions and checked our math, and many of them contributed so much useful feedback that they're practically co-authors. Sonia Gaballa of Nudge Design did great work with our website, and the production team at O'Reilly put up with our unreasonable demands and constant changes. And folks at Totango, Price Intelligently, Chartbeat, Startup Compass, and others all dug into anonymized customer data to enlighten us on things like Software as a Service, pricing, engagement, and average metrics.

But most of all, we want to thank people who challenged us, shared with us, and opened their kimonos to tell us the good and bad parts of startups, often having to fight for approval to talk publicly. Some weren't able to, despite their best efforts, and we'll leave their stories for another day—but every piece of feedback helped shape this book and our understanding of how analytics and Lean Startup methods intertwine.

PART ONE:

STOP LYING TO YOURSELF

In this part of the book, we'll look at why you need data to succeed. We'll tackle some basic analytical concepts like qualitative and quantitative data, vanity metrics, correlation, cohorts, segmentation, and leading indicators. We'll consider the perils of being too data-driven. And we'll even think a bit about what you should be doing with your life.

It depends on what the meaning of the word "is" is.

William Jefferson Clinton

We're All Liars

Let's face it: you're delusional.

We're all delusional—some more than others. Entrepreneurs are the most delusional of all.

Entrepreneurs are particularly good at lying to themselves. Lying may even be a prerequisite for succeeding as an entrepreneur—after all, you need to convince others that something is true in the absence of good, hard evidence. You need believers to take a leap of faith with you. As an entrepreneur, you need to live in a semi-delusional state just to survive the inevitable rollercoaster ride of running your startup.

Small lies are essential. They create your reality distortion field. They are a necessary part of being an entrepreneur. But if you start believing your own hype, you won't survive. You'll go too far into the bubble you've created, and you won't come out until you hit the wall—hard—and that bubble bursts.

You need to lie to yourself, but not to the point where you're jeopardizing your business.

That's where data comes in.

Your delusions, no matter how convincing, will wither under the harsh light of data. Analytics is the necessary counterweight to lying, the yin to the yang of hyperbole. Moreover, data-driven learning is the cornerstone of success in startups. It's how you learn what's working and iterate toward the right product and market before the money runs out.

We're not suggesting that gut instinct is a bad thing. Instincts are inspiration, and you'll need to listen to your gut and rely on it throughout the startup journey. But don't disembowel yourself. Guts matter; you've just got to test them. *Instincts are experiments. Data is proof.*

The Lean Startup Movement

Innovation is hard work—harder than most people realize. This is true whether you're a lone startup trying to disrupt an industry or a rogue employee challenging the status quo, tilting at corporate windmills and steering around bureaucratic roadblocks. We get it. Entrepreneurship is crazy, bordering on absurd.

Lean Startup provides a framework by which you can more rigorously go about the business of creating something new. Lean Startup delivers a heavy dose of intellectual honesty. Follow the Lean model, and it becomes increasingly hard to lie, especially to yourself.

There's a reason the Lean Startup movement has taken off now. We're in the midst of a fundamental shift in how companies are built. It's vanishingly cheap to create the first version of something. Clouds are free. Social media is free. Competitive research is free. Even billing and transactions are free.* We live in a digital world, and the bits don't cost anything.

That means you can build something, measure its effect, and learn from it to build something better the next time. You can iterate quickly, deciding early on if you should double down on your idea or fold and move on to the next one. And that's where analytics comes in. Learning doesn't happen accidentally. It's an integral part of the Lean process.

Management guru and author Peter Drucker famously observed, "If you can't measure it, you can't manage it."[†] Nowhere is this truer than in the Lean model, where successful entrepreneurs build the product, the go-to-market strategy, and the systems by which to learn what customers want—simultaneously.

* When we say "free," we mean "free from significant upfront investment." Plenty of cloud and billing services cost money—sometimes more money than you'd spend doing it yourself—once your business is under way. But free, here, means free from outlay in advance of finding your product/market fit. You can use PayPal, or Google Wallet, or Eventbrite, or dozens of other payment and ticketing systems, and pass on the cost of the transaction to your consumers.

† In *Management: Tasks, Responsibilities, Practices* (HarperBusiness), Drucker wrote, "Without productivity objectives, a business does not have direction. Without productivity measurements, it does not have control."

Poking a Hole in Your Reality Distortion Field

Most entrepreneurs have been crushed, usually more than once. If you haven't been solidly trounced on a regular basis, you're probably doing it wrong, and aren't taking the risks you need to succeed in a big way.

But there's a moment on the startup rollercoaster where the whole thing comes right off the rails. It's truly failed. There's little more to do than turn off the website and close down the bank account. You're overwhelmed, the challenges are too great, and it's over. You've failed.

Long before the actual derailment, you knew this was going to happen. It wasn't working. But at the time, your reality distortion field was strong enough to keep you going on faith and fumes alone. As a result, you hit the wall at a million miles an hour, lying to yourself the whole time.

We're not arguing against the importance of the reality distortion field—but we do want to poke a few holes in it. Hopefully, as a result, you'll see the derailment in time to avoid it. We want you to rely less on your reality distortion field, and rely more on Lean Analytics.

CASE STUDY

Airbnb Photography—Growth Within Growth

Airbnb is an incredible success story. In just a few years, the company has become a powerhouse in the travel industry, providing travelers with an alternative to hotels, and providing individuals who have rooms, apartments, or homes to rent with a new source of income. In 2012, travelers booked over 5 million nights with Airbnb's service. But it started small, and its founders—adherents to the Lean Startup mindset—took a very methodical approach to their success.

At SXSW 2012, Joe Zadeh, Product Lead at Airbnb, shared part of the company's amazing story. He focused on one aspect of its business: *professional photography*.

It started with a hypothesis: "Hosts with professional photography will get more business. And hosts will sign up for professional photography as a service." This is where the founders' gut instincts came in: they had a sense that professional photography would help their business. But rather than implementing it outright, they built a *Concierge Minimum Viable Product* (MVP) to quickly test their hypothesis.

What Is a Concierge MVP?

The *Minimum Viable Product* is the smallest thing you can build that will create the value you've promised to your market. But nowhere in that definition does it say how much of that offering has to be real. If you're considering building a ride-sharing service, for example, you can try to connect drivers and passengers the old-fashioned way: by hand.

This is a concierge approach. It recognizes that sometimes, building a product—even a minimal one— isn't worth the investment. The risk you're investigating is, "Will people accept rides from others?" It's emphatically *not*, "Can I build software to match drivers and passengers?" A Concierge MVP won't scale, but it's fast and easy in the short term.

Now that it's cheap, even free, to launch a startup, the really scarce resource is attention. A concierge approach in which you run things behind the scenes for the first few customers lets you check whether the need is real; it also helps you understand which things people really use and refine your process before writing a line of code or hiring a single employee.

Initial tests of Airbnb's MVP showed that professionally photographed listings got *two to three times* more bookings than the market average. This validated the founders' first hypothesis. And it turned out that hosts were wildly enthusiastic about receiving an offer from Airbnb to take those photographs for them.

In mid-to-late 2011, Airbnb had 20 photographers in the field taking pictures for hosts—roughly the same time period where we see the proverbial "hockey stick" of growth in terms of nights booked, shown in Figure 1-1.

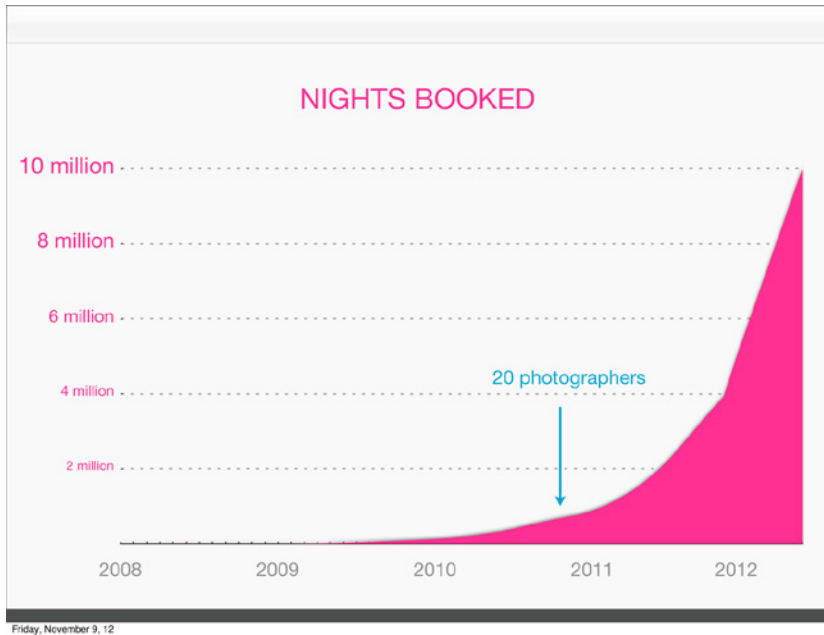


Figure 1-1. It's amazing what you can do with 20 photographers and people's apartments

Airbnb experimented further. It watermarked photos to add authenticity. It got customer service to offer professional photography as a service when renters or potential renters called in. It increased the requirements on photo quality. Each step of the way, the company measured the results and adjusted as necessary. The key metric Airbnb tracked was shoots per month, because it had already proven with its Concierge MVP that more professional photographs meant more bookings.

By February 2012, Airbnb was doing nearly 5,000 shoots per month and continuing to accelerate the growth of the professional photography program.

Summary

- Airbnb's team had a hunch that better photos would increase rentals.
- They tested the idea with a Concierge MVP, putting the least effort possible into a test that would give them valid results.
- When the experiment showed good results, they built the necessary components and rolled it out to all customers.

Analytics Lessons Learned

Sometimes, growth comes from an aspect of your business you don't expect. When you think you've found a worthwhile idea, decide how to test it quickly, with minimal investment. Define what success looks like beforehand, and know what you're going to do if your hunch is right.

Lean is a great way to build businesses. And analytics ensures that you'll collect and analyze data. Both fundamentally transform how you think about starting and growing a company. Both are more than processes—they're mindsets. Lean, analytical thinking is about asking the right questions, and focusing on the one key metric that will produce the change you're after.

With this book, we hope to provide you with the guidance, tools, and evidence to embrace data as a core component of your startup's success. *Ultimately, we want to show you how to use data to build a better startup faster.*

How to Keep Score

Analytics is about tracking the metrics that are critical to your business. Usually, those metrics matter because they relate to your business model—where money comes from, how much things cost, how many customers you have, and the effectiveness of your customer acquisition strategies.

In a startup, you don't always know which metrics are key, because you're not entirely sure what business you're in. You're frequently changing the activity you analyze. You're still trying to find the right product, or the right target audience. In a startup, the purpose of analytics is *to find your way to the right product and market before the money runs out*.

What Makes a Good Metric?

Here are some rules of thumb for what makes a good metric—a number that will drive the changes you're looking for.

A good metric is comparative. Being able to compare a metric to other time periods, groups of users, or competitors helps you understand which way things are moving. “Increased conversion from last week” is more meaningful than “2% conversion.”

A good metric is understandable. If people can't remember it and discuss it, it's much harder to turn a change in the data into a change in the culture.

A good metric is a ratio or a rate. Accountants and financial analysts have several ratios they look at to understand, at a glance, the fundamental health of a company.* You need some, too.

There are several reasons ratios tend to be the best metrics:

- **Ratios are easier to act on.** Think about driving a car. Distance travelled is informational. But speed—distance per hour—is something you can act on, because it tells you about your current state, and whether you need to go faster or slower to get to your destination on time.
- **Ratios are inherently comparative.** If you compare a daily metric to the same metric over a month, you'll see whether you're looking at a sudden spike or a long-term trend. In a car, speed is one metric, but speed right now over average speed this hour shows you a lot about whether you're accelerating or slowing down.
- **Ratios are also good for comparing factors that are somehow opposed, or for which there's an inherent tension.** In a car, this might be distance covered divided by traffic tickets. The faster you drive, the more distance you cover—but the more tickets you get. This ratio might suggest whether or not you should be breaking the speed limit.

Leaving our car analogy for a moment, consider a startup with free and paid versions of its software. The company has a choice to make: offer a rich set of features for free to acquire new users, or reserve those features for paying customers, so they will spend money to unlock them. Having a full-featured free product might reduce sales, but having a crippled product might reduce new users. You need a metric that combines the two, so you can understand how changes affect overall health. Otherwise, you might do something that increases sales revenue at the expense of growth.

A good metric changes the way you behave. This is by far the most important criterion for a metric: what will you do differently based on changes in the metric?

- “Accounting” metrics like daily sales revenue, when entered into your spreadsheet, need to make your predictions more accurate. These metrics form the basis of Lean Startup’s *innovation accounting*, showing you how close you are to an ideal model and whether your actual results are converging on your business plan.

* This includes fundamentals such as the price-to-earnings ratio, sales margins, the cost of sales, revenue per employee, and so on.

- “Experimental” metrics, like the results of a test, help you to optimize the product, pricing, or market. Changes in these metrics will significantly change your behavior. Agree on what that change will be before you collect the data: if the pink website generates more revenue than the alternative, you’re going pink; if more than half your respondents say they won’t pay for a feature, don’t build it; if your curated MVP doesn’t increase order size by 30%, try something else.

Drawing a line in the sand is a great way to enforce a disciplined approach. A good metric changes the way you behave precisely *because* it’s aligned to your goals of keeping users, encouraging word of mouth, acquiring customers efficiently, or generating revenue.

Unfortunately, that’s not always how it happens.

Renowned author, entrepreneur, and public speaker Seth Godin cites several examples of this in a blog post entitled “Avoiding false metrics.”* Funnily enough (or maybe not!), one of Seth’s examples, which involves car salespeople, recently happened to Ben.

While finalizing the paperwork for his new car, the dealer said to Ben, “You’ll get a call in the next week or so. They’ll want to know about your experience at the dealership. It’s a quick thing, won’t take you more than a minute or two. It’s on a scale from 1 to 5. You’ll give us a 5, right? Nothing in the experience would warrant less, right? If so, I’m very, very sorry, but a 5 would be great.”

Ben didn’t give it a lot of thought (and strangely, no one ever did call). Seth would call this a *false metric*, because the car salesman spent more time asking for a good rating (which was clearly important to him) than he did providing a great experience, which was supposedly what the rating was for in the first place.

Misguided sales teams do this too. At one company, Alistair saw a sales executive tie quarterly compensation to the number of deals in the pipeline, rather than to the number of deals closed, or to margin on those sales. Salespeople are coin-operated, so they did what they always do: they followed the money. In this case, that meant a glut of junk leads that took two quarters to clean out of the pipeline—time that would have been far better spent closing qualified prospects.

Of course, customer satisfaction or pipeline flow is vital to a successful business. But if you want to change behavior, your metric must be tied to the behavioral change you want. If you measure something and it’s not

* http://sethgodin.typepad.com/seths_blog/2012/05/avoiding-false-metrics.html

attached to a goal, in turn changing your behavior, you're wasting your time. Worse, you may be lying to yourself and fooling yourself into believing that everything is OK. That's no way to succeed.

One other thing you'll notice about metrics is that they often come in pairs. *Conversion rate* (the percentage of people who buy something) is tied to *time-to-purchase* (how long it takes someone to buy something). Together, they tell you a lot about your cash flow. Similarly, *viral coefficient* (the number of people a user successfully invites to your service) and *viral cycle time* (how long it takes them to invite others) drive your adoption rate. As you start to explore the numbers that underpin your business, you'll notice these pairs. Behind them lurks a fundamental metric like revenue, cash flow, or user adoption.

If you want to choose the right metrics, you need to keep five things in mind:

Qualitative versus quantitative metrics

Qualitative metrics are unstructured, anecdotal, revealing, and hard to aggregate; quantitative metrics involve numbers and statistics, and provide hard numbers but less insight.

Vanity versus actionable metrics

Vanity metrics might make you feel good, but they don't change how you act. Actionable metrics change your behavior by helping you pick a course of action.

Exploratory versus reporting metrics

Exploratory metrics are speculative and try to find unknown insights to give you the upper hand, while reporting metrics keep you abreast of normal, managerial, day-to-day operations.

Leading versus lagging metrics

Leading metrics give you a predictive understanding of the future; lagging metrics explain the past. Leading metrics are better because you still have time to act on them—the horse hasn't left the barn yet.

Correlated versus causal metrics

If two metrics change together, they're correlated, but if one metric *causes* another metric to change, they're causal. If you find a causal relationship between something you want (like revenue) and something you can control (like which ad you show), then you can change the future.

Analysts look at specific metrics that drive the business, called *key performance indicators* (KPIs). Every industry has KPIs—if you’re a restaurant owner, it’s the number of covers (tables) in a night; if you’re an investor, it’s the return on an investment; if you’re a media website, it’s ad clicks; and so on.

Qualitative Versus Quantitative Metrics

Quantitative data is easy to understand. It’s the numbers we track and measure—for example, sports scores and movie ratings. As soon as something is ranked, counted, or put on a scale, it’s quantified. Quantitative data is nice and scientific, and (assuming you do the math right) you can aggregate it, extrapolate it, and put it into a spreadsheet. But it’s seldom enough to get a business started. You can’t walk up to people, ask them what problems they’re facing, and get a quantitative answer. For that, you need qualitative input.

Qualitative data is messy, subjective, and imprecise. It’s the stuff of interviews and debates. It’s hard to quantify. You can’t measure qualitative data easily. If quantitative data answers “what” and “how much,” qualitative data answers “why.” *Quantitative data abhors emotion; qualitative data marines in it.*

Initially, you’re looking for qualitative data. You’re not measuring results numerically. Instead, you’re speaking to people—specifically, to people you think are potential customers in the right target market. You’re exploring. *You’re getting out of the building.*

Collecting good qualitative data takes preparation. You need to ask specific questions without leading potential customers or skewing their answers. You have to avoid letting your enthusiasm and reality distortion rub off on your interview subjects. Unprepared interviews yield misleading or meaningless results.

Vanity Versus Real Metrics

Many companies claim they’re data-driven. Unfortunately, while they embrace the *data* part of that mantra, few focus on the second word: *driven*. If you have a piece of data on which you cannot act, it’s a vanity metric. If all it does is stroke your ego, it won’t help. You want your data to inform, to guide, to improve your business model, to help you decide on a course of action.

Whenever you look at a metric, ask yourself, “What will I do differently based on this information?” If you can’t answer that question, you probably shouldn’t worry about the metric too much. And if you don’t know which

metrics *would* change your organization's behavior, you aren't being data-driven. You're floundering in data quicksand.

Consider, for example, "total signups." This is a vanity metric. The number can only increase over time (a classic "up and to the right" graph). It tells us nothing about what those users are doing or whether they're valuable to us. They may have signed up for the application and vanished forever.

"Total active users" is a bit better—assuming that you've done a decent job of defining an active user—but it's still a vanity metric. It will gradually increase over time, too, unless you do something horribly wrong.

The real metric of interest—the *actionable* one—is "percent of users who are active." This is a critical metric because it tells us about the level of engagement your users have with your product. When you change something about the product, this metric should change, and if you change it in a good way, it should go up. That means you can experiment, learn, and iterate with it.

Another interesting metric to look at is "number of users acquired over a specific time period." Often, this will help you compare different marketing approaches—for example, a Facebook campaign in the first week, a reddit campaign in the second, a Google AdWords campaign in the third, and a LinkedIn campaign in the fourth. Segmenting experiments by time in this way isn't precise, but it's relatively easy.* And it's actionable: if Facebook works better than LinkedIn, you know where to spend your money.

Actionable metrics aren't magic. They won't tell you what to do—in the previous example, you could try changing your pricing, or your medium, or your wording. The point here is that you're doing *something* based on the data you collect.

PATTERN | **Eight Vanity Metrics to Watch Out For**

It's easy to fall in love with numbers that go up and to the right. Here's a list of eight notorious vanity metrics you should avoid.

1. **Number of hits.** This is a metric from the early, foolish days of the Web. If you have a site with many objects on it, this will be a big number. Count people instead.

* A better way is to run the four campaigns concurrently, using analytics to group the users you acquire into distinct *segments*. You'll get your answer in one week rather than four, and control for other variables like seasonal variation. We'll get into more detail about segmentation and cohort analysis later.

2. **Number of page views.** This is only slightly better than hits, since it counts the number of times someone requests a page. Unless your business model depends on page views (i.e., display advertising inventory), you should count people instead.
3. **Number of visits.** Is this one person who visits a hundred times, or are a hundred people visiting once? Fail.
4. **Number of unique visitors.** All this shows you is how many people saw your home page. It tells you nothing about what they did, why they stuck around, or if they left.
5. **Number of followers/friends/likes.** Counting followers and friends is nothing more than a popularity contest, unless you can get them to do something useful for you. Once you know how many followers will do your bidding when asked, you've got something.
6. **Time on site/number of pages.** These are a poor substitute for actual engagement or activity unless your business is tied to this behavior. If customers spend a lot of time on your support or complaints pages, that's probably a bad thing.
7. **Emails collected.** A big mailing list of people excited about your new startup is nice, but until you know how many will open your emails (and act on what's inside them), this isn't useful. Send test emails to some of your registered subscribers and see if they'll do what you tell them.
8. **Number of downloads.** While it sometimes affects your ranking in app stores, downloads alone don't lead to real value. Measure activations, account creations, or something else.

Exploratory Versus Reporting Metrics

Avinash Kaushik, author and Digital Marketing Evangelist at Google, says former US Secretary of Defense Donald Rumsfeld knew a thing or two about analytics. According to Rumsfeld:

There are known knowns; there are things we know that we know.
There are known unknowns; that is to say there are things that we now know we don't know. But there are also unknown unknowns—there are things we do not know, we don't know.

Figure 2-1 shows these four kinds of information.

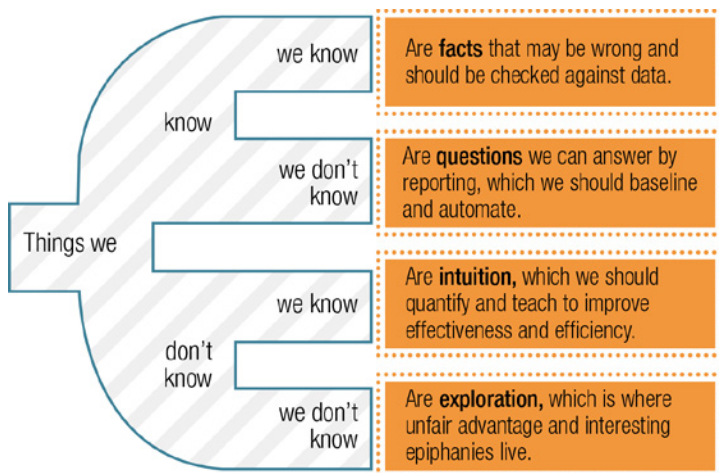


Figure 2-1. *The hidden genius of Donald Rumsfeld*

The “known unknowns” is a reporting posture—counting money, or users, or lines of code. We *know* we don’t know the value of the metric, so we go find out. We may use these metrics for accounting (“How many widgets did we sell today?”) or to measure the outcome of an experiment (“Did the green or the red widget sell more?”), but in both cases, we know the metric is needed.

The “unknown unknowns” are most relevant to startups: exploring to discover something new that will help you disrupt a market. As we’ll see in the next case study, it’s how Circle of Friends found out that moms were its best users. These “unknown unknowns” are where the magic lives. They lead down plenty of wrong paths, and hopefully toward some kind of “eureka!” moment when the idea falls into place. This fits what Steve Blank says a startup should spend its time doing: searching for a scalable, repeatable business model.

Analytics has a role to play in all four of Rumsfeld’s quadrants:

- It can check our facts and assumptions—such as open rates or conversion rates—to be sure we’re not kidding ourselves, and check that our business plans are accurate.
- It can test our intuitions, turning hypotheses into evidence.
- It can provide the data for our spreadsheets, waterfall charts, and board meetings.
- It can help us find the nugget of opportunity on which to build a business.

In the early stages of your startup, the unknown unknowns matter most, because they can become your secret weapons.

CASE STUDY

Circle of Moms Explores Its Way to Success

Circle of Friends was a simple idea: a Facebook application that allowed you to organize your friends into circles for targeted content sharing. Mike Greenfield and his co-founders started the company in September 2007, shortly after Facebook launched its developer platform. The timing was perfect: Facebook became an open, viral place to acquire users as quickly as possible and build a startup. There had never been a platform with so many users and that was so open (Facebook had about 50 million users at the time).

By mid-2008, Circle of Friends had 10 million users. Mike focused on growth above everything else. “It was a land grab,” he says, and Circle of Friends was clearly viral. But there was a problem. Too few people were actually *using* the product.

According to Mike, less than 20% of circles had any activity whatsoever after their initial creation. “We had a few million monthly uniques from those 10 million users, but as a general social network we knew that wasn’t good enough and monetization would likely be poor.”

So Mike went digging.

He started looking through the database of users and what they were doing. The company didn’t have an in-depth analytical dashboard at the time, but Mike could still do some exploratory analysis. And he found a segment of users—moms, to be precise—that bucked the poor engagement trend of most users. Here’s what he found:

- Their messages to one another were on average 50% longer.
- They were 115% more likely to attach a picture to a post they wrote.
- They were 110% more likely to engage in a threaded (i.e., deep) conversation.
- They had friends who, once invited, were 50% more likely to become engaged users themselves.
- They were 75% more likely to click on Facebook notifications.
- They were 180% more likely to click on Facebook news feed items.
- They were 60% more likely to accept invitations to the app.

The numbers were so compelling that in June 2008, Mike and his team switched focus completely. They pivoted. And in October 2008, they launched Circle of Moms on Facebook.

Initially, numbers dropped as a result of the new focus, but by 2009, the team grew its community to 4.5 million users—and unlike the users who'd been lost in the change, these were actively engaged. The company went through some ups and downs after that, as Facebook limited applications' abilities to spread virally. Ultimately, the company moved off Facebook, grew independently, and sold to Sugar Inc. in early 2012.

Summary

- Circle of Friends was a social graph application in the right place at the right time—with the wrong market.
- By analyzing patterns of engagement and desirable behavior, then finding out what those users had in common, the company found the right market for its offering.
- Once the company had found its target, it focused—all the way to changing its name. Pivot hard or go home, and be prepared to burn some bridges.

Analytics Lessons Learned

The key to Mike's success with Circle of Moms was his ability to dig into the data and look for meaningful patterns and opportunities. Mike discovered an “unknown unknown” that led to a big, scary, gutsy bet (drop the generalized Circle of Friends to focus on a specific niche) that was a gamble—but one that was based on data.

There's a “critical mass” of engagement necessary for any community to take off. Mild success may not give you escape velocity. As a result, it's better to have fervent engagement with a smaller, more easily addressable target market. Virality requires focus.

Leading Versus Lagging Metrics

Both leading and lagging metrics are useful, but they serve different purposes.

A leading metric (sometimes called a *leading indicator*) tries to predict the future. For example, the current number of prospects in your sales funnel gives you a sense of how many new customers you'll acquire in the future.

If the current number of prospects is very small, you're not likely to add many new customers. You can increase the number of prospects and expect an increase in new customers.

On the other hand, a lagging metric, such as *churn* (which is the number of customers who leave in a given time period) gives you an indication that there's a problem—but by the time you're able to collect the data and identify the problem, it's too late. The customers who churned out aren't coming back. That doesn't mean you can't act on a lagging metric (i.e., work to improve churn and then measure it again), but it's akin to closing the barn door after the horses have left. New horses won't leave, but you've already lost a few.

In the early days of your startup, you won't have enough data to know how a current metric relates to one down the road, so measure lagging metrics at first. Lagging metrics are still useful and can provide a solid baseline of performance. For leading indicators to work, you need to be able to do cohort analysis and compare groups of customers over periods of time.

Consider, for example, the volume of customer complaints. You might track the number of support calls that happen in a day—once you've got a call volume to make that useful. Earlier on, you might track the number of customer complaints in a 90-day period. Both could be leading indicators of churn: if complaints are increasing, it's likely that more customers will stop using your product or service. As a leading indicator, customer complaints also give you ammunition to dig into what's going on, figure out why customers are complaining more, and address those issues.

Now consider account cancellation or product returns. Both are important metrics—but they measure after the fact. They pinpoint problems, but only after it's too late to avert the loss of a customer. Churn is important (and we discuss it at length throughout the book), but looking at it myopically won't let you iterate and adapt at the speed you need.

Indicators are everywhere. In an enterprise software company, quarterly new product bookings are a lagging metric of sales success. By contrast, new qualified leads are a leading indicator, because they let you predict sales success ahead of time. But as anyone who's ever worked in B2B (business-to-business) sales will tell you, in addition to qualified leads you need a good understanding of conversion rate and sales-cycle length. Only then can you make a realistic estimate of how much new business you'll book.

In some cases, a lagging metric for one group within a company is a leading metric for another. For example, we know that the number of quarterly bookings is a lagging metric for salespeople (the contracts are signed already), but for the finance department that's focused on collecting

payment, they're a leading indicator of expected revenue (since the revenue hasn't yet been realized).

Ultimately, you need to decide whether the thing you're tracking helps you make better decisions sooner. As we've said, a real metric has to be actionable. Lagging and leading metrics can both be actionable, but leading indicators show you what *will* happen, reducing your cycle time and making you leaner.

Correlated Versus Causal Metrics

In Canada, the use of winter tires is correlated with a decrease in accidents. People put softer winter tires on their cars in cold weather, and there are more accidents in the summer.* Does that mean we should make drivers use winter tires year-round? Almost certainly not—softer tires stop poorly on warm summer roads, and accidents would increase.

Other factors, such as the number of hours driven and summer vacations, are likely responsible for the increased accident rates. But looking at a simple correlation without demanding causality leads to some bad decisions. There's a correlation between ice cream consumption and drowning. Does that mean we should ban ice cream to avert drowning deaths? Or measure ice cream consumption to predict the fortunes of funeral home stock prices? No: ice cream and drowning rates both happen *because of* summer weather.

Finding a correlation between two metrics is a good thing. Correlations can help you predict what will happen. But finding the *cause* of something means you can change it. Usually, causations aren't simple one-to-one relationships. Many factors conspire to cause something. In the case of summertime car crashes, we have to consider alcohol consumption, the number of inexperienced drivers on the road, the greater number of daylight hours, summer vacations, and so on. So you'll seldom get a 100% causal relationship. You'll get several independent metrics, each of which "explains" a portion of the behavior of the dependent metric. But even a degree of causality is valuable.

You prove causality by finding a correlation, then running an experiment in which you control the other variables and measure the difference. This is hard to do because no two users are identical; it's often impossible to subject a statistically significant number of people to a properly controlled experiment in the real world.

* <http://www.statcan.gc.ca/pub/82-003-x/2008003/article/10648/c-g/5202438-eng.htm>

If you have a big enough sample of users, you can run a reliable test without controlling all the other variables, because eventually the impact of the other variables is relatively unimportant. That's why Google can test subtle factors like the color of a hyperlink,^{*} and why Microsoft knows exactly what effect a slower page load time has on search rates.[†] But for the average startup, you'll need to run simpler tests that experiment with only a few things, and then compare how that changed the business.

We'll look at different kinds of testing and segmentation shortly, but for now, recognize this: correlation is good. Causality is great. Sometimes, you may have to settle for the former—but you should always be trying to discover the latter.

Moving Targets

When picking a goal early on, you're drawing a line in the sand—not carving it in stone. You're chasing a moving target, because you really don't know how to define success.

Adjusting your goals and how you define your key metrics is acceptable, provided that you're being honest with yourself, recognizing the change this means for your business, and not just lowering expectations so that you can keep going in spite of the evidence.

When your initial offering—your minimum viable product—is in the market and you're acquiring early-adopter customers and testing their use of your product, you won't even know how they're going to use it (although you'll have assumptions). Sometimes there's a huge gulf between what you assume and what users actually do. You might think that people will play your multiplayer game, only to discover that they're using you as a photo upload service. Unlikely? That's how Flickr got started.

Sometimes, however, the differences are subtler. You might assume your product has to be used daily to succeed, only to find out that's not so. In these situations, it's reasonable to update your metrics accordingly, provided that you're able to prove the value created.

^{*} <http://gigaom.com/2009/07/09/when-it-comes-to-links-color-matters/>

[†] <http://velocityconf.com/velocity2009/public/schedule/detail/8523>

HighScore House Defines an “Active User”

HighScore House started as a simple application that allowed parents to list chores and challenges for their children with point values. Kids could complete the tasks, collect points, and redeem the points for rewards they wanted.

When HighScore House launched its MVP, the company had several hundred families ready to test it. The founders drew a line in the sand: in order for the MVP to be considered successful, parents and kids would have to each use the application four times per week. These families would be considered “active.” It was a high, but good, bar.

After a month or so, the percentage of active families was lower than this line in the sand. The founders were disappointed but determined to keep experimenting in an effort to improve engagement:

- They modified the sign-up flow (making it clearer and more educational to increase quality signups and to improve onboarding).
- They sent email notifications as daily reminders to parents.
- They sent transactional emails to parents based on actions their kids took in the system.

There was an incremental improvement each time, but nothing that moved the needle significantly enough to say that the MVP was a success.

Then co-founder and CEO Kyle Seaman did something critical: *he picked up the phone*. Kyle spoke with dozens of parents. He started calling parents who had signed up, but who weren’t active. First he reached out to those that had abandoned HighScore House completely (“churned out”). For many of them, the application wasn’t solving a big enough pain point. That’s fine. The founders never assumed the market was “all parents”—that’s just too broad a definition, particularly for a first version of a product. Kyle was looking for a smaller subset of families where HighScore House would resonate, to narrow the market segment and focus.

Kyle then called those families who *were* using HighScore House, but not using it enough to be defined as active. Many of these families responded positively: “We’re using HighScore House. It’s great. The kids are making their beds consistently for the first time ever!”

The response from parents was a surprise. Many of them were using HighScore House only once or twice a week, but they were getting value out of the product. From this, Kyle learned about segmentation and which types of families were more or less interested in what the company was offering. He began to understand that the initial baseline of usage the team had set wasn't consistent with how engaged customers were using the product.

That doesn't mean the team shouldn't have taken a guess. Without that initial line in the sand, they would have had no benchmark for learning, and Kyle might not have picked up the phone. But now he really understood his customers. The combination of quantitative and qualitative data was key.

As a result of this learning, the team redefined the "active user" threshold to more accurately reflect existing users' behavior. It was okay for them to adjust a key metric because they truly understood why they were doing it and could justify the change.

Summary

- HighScore House drew an early, audacious line in the sand—which it couldn't hit.
- The team experimented quickly to improve the number of active users but couldn't move the needle enough.
- They picked up the phone and spoke to customers, realizing that they were creating value for a segment of users with lower usage metrics.

Analytics Lessons Learned

First, know your customer. There's no substitute for engaging with customers and users directly. All the numbers in the world can't explain why something is happening. Pick up the phone right now and call a customer, even one who's disengaged.

Second, make early assumptions and set targets for what you think success looks like, but don't experiment yourself into oblivion. Lower the bar if necessary, but not for the sake of getting over it: that's just cheating. Use qualitative data to understand what value you're creating and adjust only if the new line in the sand reflects how customers (in specific segments) are using your product.

Segments, Cohorts, A/B Testing, and Multivariate Analysis

Testing is at the heart of Lean Analytics. Testing usually involves comparing two things against each other through segmentation, cohort analysis, or A/B testing. These are important concepts for anyone trying to perform the kind of scientific comparison needed to justify a change, so we'll explain them in some detail here.

Segmentation

A segment is simply a group that shares some common characteristic. It might be users who run Firefox, or restaurant patrons who make reservations rather than walking in, or passengers who buy first-class tickets, or parents who drive minivans.

On websites, you segment visitors according to a range of technical and demographic information, then compare one segment to another. If visitors using the Firefox browser have significantly fewer purchases, do additional testing to find out why. If a disproportionate number of engaged users are coming from Australia, survey them to discover why, and then try to replicate that success in other markets.

Segmentation works for any industry and any form of marketing, not just for websites. Direct mail marketers have been segmenting for decades with great success.

Cohort Analysis

A second kind of analysis, which compares similar groups over time, is cohort analysis. As you build and test your product, you'll iterate constantly. Users who join you in the first week will have a different experience from those who join later on. For example, all of your users might go through an initial free trial, usage, payment, and abandonment cycle. As this happens, you'll make changes to your business model. The users who experienced the trial in month one will have a different onboarding experience from those who experience it in month five. How did that affect their churn? To find out, we use cohort analysis.

Each group of users is a cohort—participants in an experiment across their lifecycle. You can compare cohorts against one another to see if, on the whole, key metrics are getting better over time. Here's an example of why cohort analysis is critical for startups.

Imagine that you’re running an online retailer. Each month, you acquire a thousand new customers, and they spend some money. Table 2-1 shows your customers’ average revenues from the first five months of the business.

	January	February	March	April	May
Total customers	1,000	2,000	3,000	4,000	5,000
Average revenue per customer	\$5.00	\$4.50	\$4.33	\$4.25	\$4.50

Table 2-1. Average revenues for five months

From this table, you can’t learn much. Are things getting better or worse? Since you aren’t comparing recent customers to older ones—and because you’re commingling the purchases of a customer who’s been around for five months with those of a brand new one—it’s hard to tell. All this data shows is a slight drop in revenues, then a recovery. But average revenue is pretty static.

Now consider the same data, broken out by the month in which that customer group started using the site. As Table 2-2 shows, something important is going on. Customers who arrived in month five are spending, on average, \$9 in their first month—nearly double that of those who arrived in month one. That’s huge growth!

	January	February	March	April	May
New users	1,000	1,000	1,000	1,000	1,000
Total users	1,000	2,000	3,000	4,000	5,000
Month 1	\$5.00	\$3.00	\$2.00	\$1.00	\$0.50
Month 2		\$6.00	\$4.00	\$2.00	\$1.00
Month 3			\$7.00	\$6.00	\$5.00
Month 4				\$8.00	\$7.00
Month 5					\$9.00

Table 2-2. Comparing revenues by the month customers arrived

Another way to understand cohorts is to line up the data by the users’ experience—in the case of Table 2-3, we’ve done this by the number of

months they’ve used the system. This shows another critical metric: how quickly revenue declines after the first month.

	Month of use				
Cohort	1	2	3	4	5
January	\$5.00	\$3.00	\$2.00	\$1.00	\$0.50
February	\$6.00	\$4.00	\$2.00	\$1.00	
March	\$7.00	\$6.00	\$5.00		
April	\$8.00	\$7.00			
May	\$9.00				
Averages	\$7.00	\$5.00	\$3.00	\$1.00	\$0.50

Table 2-3. Cohort analysis of revenue data

A cohort analysis presents a *much* clearer perspective. In this example, poor monetization in early months was diluting the overall health of the metrics. The January cohort—the first row—spent \$5 in its first month, then tapered off to only \$0.50 in its fifth month. But first-month spending is growing dramatically, and the drop-off seems better, too: April’s cohort spent \$8 in its first month and \$7 in its second month. A company that seemed stalled is in fact flourishing. And you know what metric to focus on: drop-off in sales after the first month.

This kind of reporting allows you to see patterns clearly against the lifecycle of a customer, rather than slicing across all customers blindly without accounting for the natural cycle a customer undergoes. Cohort analysis can be done for revenue, churn, viral word of mouth, support costs, or any other metric you care about.

A/B and Multivariate Testing

Cohort experiments that compare groups like the one in Table 2-2 are called *longitudinal* studies, since the data is collected *along* the natural lifespan of a customer group. By contrast, studies in which different groups of test subjects are given different experiences at the same time are called *cross-sectional* studies. Showing half of the visitors a blue link and half of them a green link in order to see which group is more likely to click that link is a cross-sectional study. When we’re comparing one attribute of a subject’s experience, such as link color, and assuming everything else is equal, we’re doing A/B testing.

You can test everything about your product, but it's best to focus on the critical steps and assumptions. The results can pay off dramatically: Jay Parmar, co-founder of crowd-funded ticketing site Picatic, told us that simply changing the company's call to action from "Get started free" to "Try it out free" increased the number of people who clicked on an offer—known as the *click-through rate*—by 376% for a 10-day period.

A/B tests seem relatively simple, but they have a problem. Unless you're a huge web property—like Bing or Google—with enough traffic to run a test on a single factor like link color or page speed and get an answer quickly, you'll have more things to test than you have traffic. You might want to test the color of a web page, the text in a call to action, and the picture you're showing to visitors.

Rather than running a series of separate tests one after the other—which will delay your learning cycle—you can analyze them all at once using a technique called *multivariate analysis*. This relies on statistical analysis of the results to see which of many factors correlates strongly with an improvement in a key metric.

Figure 2-2 illustrates these four ways of slicing users into subgroups and analyzing or testing them.

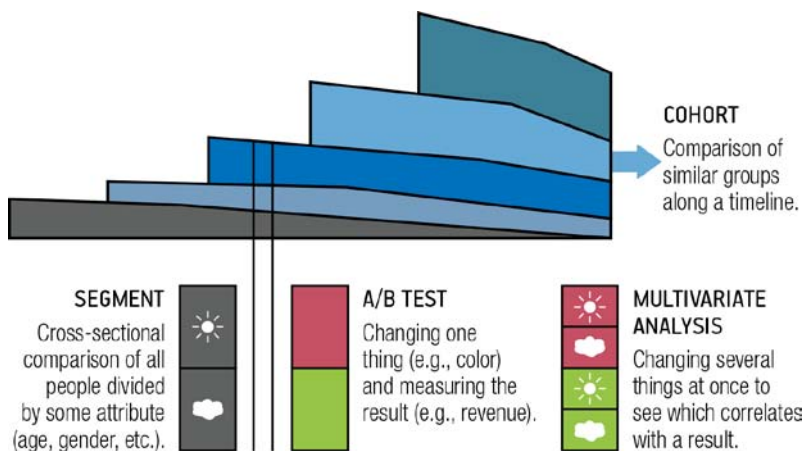


Figure 2-2. Cohorts, segments, A/B testing, and multivariate analysis, oh my

The Lean Analytics Cycle

Much of Lean Analytics is about finding a meaningful metric, then running experiments to improve it until that metric is good enough for you to move to the next problem or the next stage of your business, as shown in Figure 2-3.

Eventually, you'll find a business model that is sustainable, repeatable, and growing, and learn how to scale it.

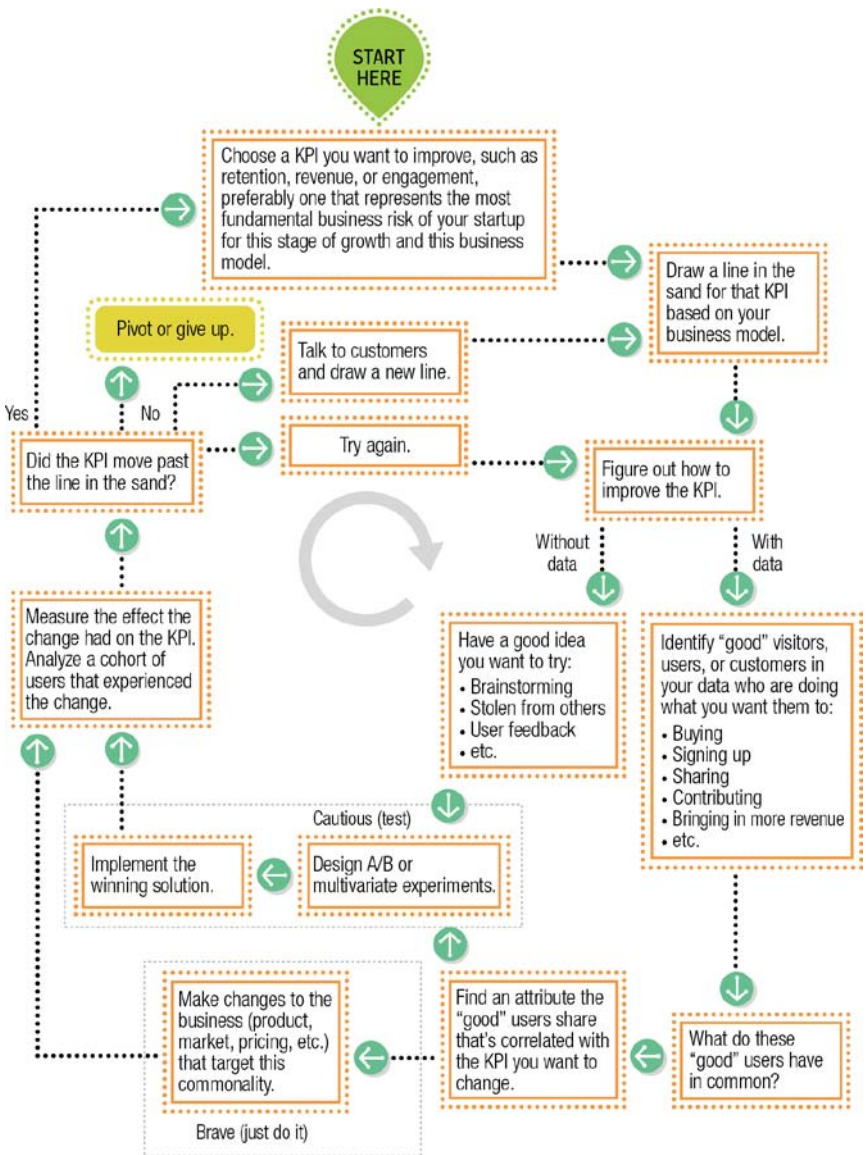


Figure 2-3. The circle of life for analytical startups

We've covered a lot of background on metrics and analytics in this chapter, and your head might be a bit full at this point. You've learned:

- What makes a good metric
- What vanity metrics are and how to avoid them
- The difference between qualitative and quantitative metrics, between exploratory and reporting metrics, between leading and lagging metrics, and between correlated and causal metrics
- What A/B testing is, and why multivariate testing is more common
- The difference between segments and cohorts

In the coming chapters, you'll put all of these dimensions to work on a variety of business models and stages of startup growth.

EXERCISE | Evaluating the Metrics You Track

Take a look at the top three to five metrics that you track religiously and review daily. Write them down. Now answer these questions about them:

- How many of those metrics are good metrics?
- How many do you use to make business decisions, and how many are just vanity metrics?
- Can you eliminate any that aren't adding value?
- Are there others that you're now thinking about that may be more meaningful?

Cross off the bad ones and add new ones to the bottom of your list, and let's keep going through the book.

Deciding What to Do with Your Life

As a founder, you're trying to decide what to spend the next few years of your life working on. The reason you want to be lean and analytical about the process is so that you don't waste your life building something nobody wants. Or, as Netscape founder and venture capitalist Marc Andreessen puts it, "*Markets that don't exist don't care how smart you are.*"*

Hopefully, you have an idea of what you want to build. It's your blueprint, and it's what you'll test with analytics. You need a way of quickly and consistently articulating your hypotheses around that idea, so you can go and verify (or repudiate) them with real customers. To do this, we recommend Ash Maurya's Lean Canvas, which lays out a clear process for defining and adjusting a business model based on customer development. We'll discuss Ash's model later in this chapter.

But the canvas is only half of what you need. It's not just about finding a business that works—you also need to find a business that you want to work on. Strategic consultant, blogger, and designer Bud Caddell has three clear criteria for deciding what to spend your time on: something that you're good at, that you want to do, and that you can make money doing.

Let's look at the Lean Canvas and Bud's three criteria in more detail.

* <http://pmarca-archive.posterous.com/the-pmarca-guide-to-startups-part-4-the-only>

The Lean Canvas

The Lean Canvas is a one-page visual business plan that's ongoing and actionable. It was created by Ash Maurya, and inspired by Alex Osterwalder's Business Model Canvas.* As you can see in Figure 3-1, it consists of nine boxes organized on a single sheet of paper, designed to walk you through the most important aspects of any business.

PROBLEM List your top 1–3 problems 1 EXISTING ALTERNATIVES List how these problems are solved today	SOLUTION Outline a possible solution for each problem 4	UNIQUE VALUE PROPOSITION Single, clear, compelling message that turns an unaware visitor into an interested prospect 3 HIGH-LEVEL CONCEPT List your X for Y analogy (e.g., YouTube = Flickr for videos)	UNFAIR ADVANTAGE Something that can't be easily copied or bought 9	CUSTOMER SEGMENTS List your target customers and users 2
	KEY METRICS List the key numbers that tell you how your business is doing 8		CHANNELS List your path to customers 5	EARLY ADOPTERS List the characteristics of your ideal customers
COST STRUCTURE List your fixed and variable costs 7			REVENUE STREAMS List your sources of revenue 6	

Figure 3-1. You can describe your entire business in nine small boxes

The Lean Canvas is fantastic at identifying the areas of biggest risk and enforcing intellectual honesty. When you're trying to decide if you've got a real business opportunity, Ash says you should consider the following:

1. **Problem:** Have you identified real problems people know they have?
2. **Customer segments:** Do you know your target markets? Do you know how to target messages to them as distinct groups?
3. **Unique value proposition:** Have you found a clear, distinctive, memorable way to explain why you're better or different?
4. **Solution:** Can you solve the problems in the right way?

* <http://www.businessmodelgeneration.com/canvas>

5. **Channels:** How will you get your product or service to your customers, and their money back to you?
6. **Revenue streams:** Where will the money come from? Will it be one-time or recurring? The result of a direct transaction (e.g., buying a meal) or something indirect (magazine subscriptions)?
7. **Cost structure:** What are the direct, variable, and indirect costs you'll have to pay for when you run the business?
8. **Metrics:** Do you know what numbers to track to understand if you're making progress?
9. **Unfair advantage:** What is the "force multiplier" that will make your efforts have greater impact than your competitors?

We encourage every startup to use Lean Canvas. It's an enlightening experience, and well worth the effort.

What *Should* You Work On?

The Lean Canvas provides a formal framework to help you choose and steer your business. But there's another, more human, side to all of this.

Do you want to do it?

This doesn't get asked enough. Investors say they look for passionate founders who really care about solving a problem. But it's seldom called out as something to which you should devote much thought. If you're going to survive as a founder, you have to find the intersection of demand (for your product), ability (for you to make it), and desire (for you to care about it).

That trifecta is often overlooked, withering under the harsh light of data and a flood of customer feedback. But it shouldn't. *Don't start a business you're going to hate.* Life is too short, and your weariness will show.

Bud Caddell has an amazingly simple diagram of how people should choose what to work on, shown in Figure 3-2.

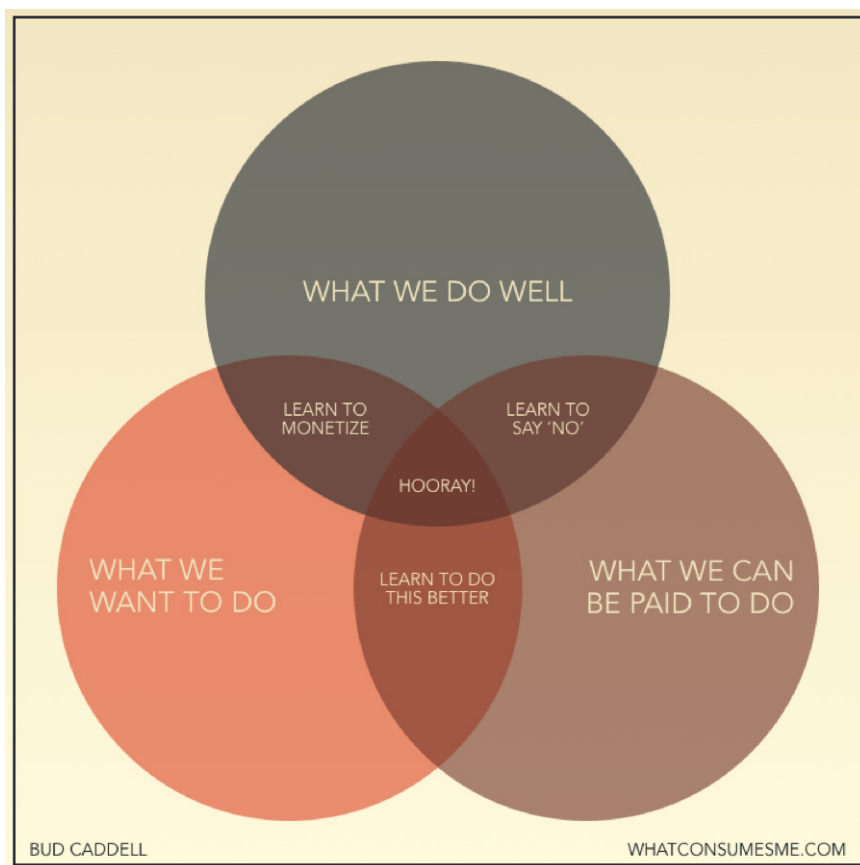


Figure 3-2. Bud Caddell's diagram belongs on every career counselor's wall

Bud's diagram shows three overlapping rings: what you *like* to do, what you're *good at*, and what you *can be paid* to do. For each intersection between rings, he suggests a course of action:

- If you want to do something and are good at it, but can't be paid to do it, *learn to monetize*.
- If you're good at something and can be paid to do it, but don't like doing it, *learn to say no*.
- If you like to do something and can be paid to do it, but aren't very good at it, *learn to do it well*.

This isn't just great advice for career counselors; when launching a new venture, you need to properly assess these three dimensions as well.

First, ask yourself: *can I do this thing I'm hoping to do, well?* This is about your ability to satisfy your market's need better than your competitors, and it's a combination of design skill, coding, branding, and myriad other factors. If you identify a real need, you won't be the only one satisfying it, and you'll need all the talent you can muster in order to succeed. Do you have a network of friends and contacts who can give you an unfair advantage that improves your odds? Do you have the talent to do the things that matter *really* well? *Never start a company on a level playing field—that's where everyone else is standing.*

These same rules apply to people working in larger organizations. Don't launch a new product or enter a new market unless your existing product and market affords you an unfair advantage. Young competitors with fewer legacies will be fighting you for market share, and your size should be an advantage, not a handicap.

Second, figure out *whether you like doing this thing*. Startups will consume your life, and they'll be a constant source of aggravation. Your business will compete with your friends, your partner, your children, and your hobbies. You need to believe in what you're doing so that you'll keep at it and ride through the good times and the bad. Would you work on it even if you weren't being paid? Is it a problem worth solving, that you'll brag about to others? Is it something that will take your career in the direction you want, and give you the right reputation within your existing organization? If not, maybe you should keep looking.

Finally, be sure *you can make money doing it*.^{*} This is about the market's need. You have to be able to extract enough money from customers for the value you'll deliver, and do so without spending a lot to acquire those customers—and the process of acquiring them and extracting their money has to scale independent of you as a founder.

For an intrapreneur, this question needs to be answered simply to get approval for the project, but remember that you're fighting the opportunity cost—whatever the organization could be doing instead, or the profitability of the existing business. If what you're doing isn't likely to have a material impact on the bottom line, maybe you should look elsewhere.

This is by far the most important of the three; the other two are easy, because they're up to you. But now you have to figure out if anyone will pay you for what you can and want to build.

* Not everyone is hoping to make money with his or her startup. Some people are doing it for attention, or to fix government, or to make the world a better place. If that's you, replace "money" with "produce the results I'm hoping to achieve" as you read this book.

In the early stages of a startup, you'll be dealing with a lot of data. You're awash in the tides of opinion, and buffeted by whatever feedback you've heard most recently.

Never forget that you're trying to answer three fundamental questions:

- Have I identified a problem worth solving?
- Is the solution I'm proposing the right one?
- Do I actually want to solve it?

Or, more succinctly: *should I go build this thing?*

EXERCISE | Create a Lean Canvas

Go to <http://leancanvas.com> to create your first canvas. Pick an idea or project you're working on now, or something you've been thinking about. Spend 20 minutes on the canvas and see what it looks like. Fill in the boxes based on the numbered order, but feel free to skip boxes that you can't fill out. We'll wait.

How did you do? Can you see what areas of your idea or business are the riskiest? Are you excited about tackling those areas of risk now that you see them described in the canvas? If you're confident, share your Lean Canvas with someone else (an investor, advisor, or colleague) and use it as a discussion starter.

Data-Driven Versus Data-Informed

Data is a powerful thing. It can be addictive, making you overanalyze everything. But much of what we actually do is unconscious, based on past experience and pragmatism. And with good reason: relying on wisdom and experience, rather than rigid analysis, helps us get through our day. After all, you don't run A/B testing before deciding what pants to put on in the morning; if you did, you'd never get out the door.

One of the criticisms of Lean Startup is that it's too data-driven. Rather than be a slave to the data, these critics say, we should use it as a tool. We should be data-informed, not data-driven. Mostly, they're just being lazy, and looking for reasons not to do the hard work. But sometimes, they have a point: using data to optimize one part of your business, without stepping back and looking at the big picture, can be dangerous—even fatal.

Consider travel agency Orbitz and its discovery that Mac users were willing to reserve a more expensive hotel room. CTO Roger Liew told the *Wall Street Journal*, “We had the intuition [that Mac users are 40% more likely to book a four- or five-star hotel than PC users and to stay in more expensive rooms], and we were able to confirm it based on the data.”*

On the one hand, an algorithm that ignores seemingly unrelated customer data (in this case, whether visitors were using a Mac) wouldn't have found this opportunity to increase revenues. On the other hand, an algorithm that

* <http://online.wsj.com/article/SB10001424052702304458604577488822667325882.html>

blindly optimizes based on customer data, regardless of its relationship to the sale, may have unintended consequences—like bad PR. Data-driven machine optimization, when not moderated by human judgment, can cause problems.

Years ago, Gail Ennis, then CMO of analytics giant Omniture, told one of us that users of the company's content optimization tools had to temper machine optimization with human judgment. Left to its own devices, the software quickly learned that scantily clad women generated a far higher click-through rate on web pages than other forms of content. But that click-through rate was a short-term gain, offset by damage to the brand of the company that relied on it. So Omniture's software works alongside curators who understand the bigger picture and provide suitable imagery for the machine to test. *Humans do inspiration; machines do validation.*

In mathematics, a local maximum is the largest value of a function within a given neighborhood.* That doesn't mean it's the largest *possible* value, just the largest one in a particular range. As an analogy, consider a lake on a mountainside. The water isn't at its lowest possible level—that would be sea level—but it's at the lowest possible level in the area surrounding the lake.

Optimization is all about finding the lowest or highest values of a particular function. A machine can find the optimal settings for something, but only within the constraints and problem space of which it's aware, in much the same way that the water in a mountainside lake can't find the lowest possible value, just the lowest value within the constraints provided.

To understand the problem with constrained optimization, imagine that you're given three wheels and asked to evolve the best, most stable vehicle. After many iterations of pitting different wheel layouts against one another, you come up with a tricycle-like configuration. It's the optimal three-wheeled configuration.

Data-driven optimization can perform this kind of iterative improvement. What it can't do, however, is say, "You know what? Four wheels would be way better!" Math is good at optimizing a known system; humans are good at finding a new one. Put another way, *change favors local maxima; innovation favors global disruption.*

In his book *River Out Of Eden* (Basic Books), Richard Dawkins uses the analogy of a flowing river to describe evolution. Evolution, he explains, can create the eye. In fact, it can create dozens of versions of it, for

* http://en.wikipedia.org/wiki/Maxima_and_minima

wasps, octopods, humans, eagles, and whales. What it can't do well is go *backward*: once you have an eye that's useful, slight mutations don't usually yield improvements. A human won't evolve an eagle's eye, because the intermediate steps all result in bad eyesight.

Machine-only optimization suffers from similar limitations as evolution. If you're optimizing for local maxima, you might be missing a bigger, more important opportunity. It's your job to be the intelligent designer to data's evolution.

Many of the startup founders with whom we've spoken have a fundamental mistrust of leaving their businesses to numbers alone. They want to trust their guts. They're uneasy with their companies being optimized without a soul, and see the need to look at the bigger picture of the market, the problem they're solving, and their fundamental business models.

Ultimately, quantitative data is great for testing hypotheses, but it's lousy for generating new ones unless combined with human introspection.

PATTERN | How to Think Like a Data Scientist

Monica Rogati, a data scientist at LinkedIn, gave us the following 10 common pitfalls that entrepreneurs should avoid as they dig into the data their startups capture.

1. **Assuming the data is clean.** Cleaning the data you capture is often most of the work, and the simple act of cleaning it up can often reveal important patterns. "Is an instrumentation bug causing 30% of your numbers to be null?" asks Monica. "Do you really have that many users in the 90210 zip code?" Check your data at the door to be sure it's valid and useful.
2. **Not normalizing.** Let's say you're making a list of popular wedding destinations. You could count the number of people flying in for a wedding, but unless you consider the total number of air travellers coming to that city as well, you'll just get a list of cities with busy airports.
3. **Excluding outliers.** Those 21 people using your product more than a thousand times a day are either your biggest fans, or bots crawling your site for content. Whichever they are, ignoring them would be a mistake.
4. **Including outliers.** While those 21 people using your product a thousand times a day are interesting from a *qualitative* perspective, because they can show you things you didn't expect, they're not good for building a general model. "You probably want to exclude

them when building data products,” cautions Monica. “Otherwise, the ‘you may also like’ feature on your site will have the same items everywhere—the ones your hardcore fans wanted.”

5. **Ignoring seasonality.** “Whoa, is ‘intern’ the fastest-growing job of the year? Oh, wait, it’s June.” Failure to consider time of day, day of week, and monthly changes when looking at patterns leads to bad decision making.
6. **Ignoring size when reporting growth.** Context is critical. Or, as Monica puts it, “When you’ve just started, technically, your dad signing up does count as doubling your user base.”
7. **Data vomit.** A dashboard isn’t much use if you don’t know where to look.
8. **Metrics that cry wolf.** You want to be responsive, so you set up alerts to let you know when something is awry in order to fix it quickly. But if your thresholds are too sensitive, they get “whiny”—and you’ll start to ignore them.
9. **The “Not Collected Here” syndrome.** “Mashing up your data with data from other sources can lead to valuable insights,” says Monica. “Do your best customers come from zip codes with a high concentration of sushi restaurants?” This might give you a few great ideas about what experiments to run next—or even influence your growth strategy.
10. **Focusing on noise.** “We’re hardwired (and then programmed) to see patterns where there are none,” Monica warns. “It helps to set aside the vanity metrics, step back, and look at the bigger picture.”

Lean Startup and Big Vision

Some entrepreneurs are maniacally, almost compulsively, data-obsessed, but tend to get mired in analysis paralysis. Others are casual, shoot-from-the-hip intuitionists who ignore data unless it suits them, and pivot lazily from idea to idea without discipline. At the root of this divide is the fundamental challenge that Lean Startup advocates face: how do you have a minimum viable product and a hugely compelling vision at the same time?

Plenty of founders use Lean Startup as an excuse to start a company without a vision. “It’s so easy to start a company these days.” They reason, “the barriers are so low that everyone can do it, right?” Yet having a big vision is important: starting a company without one makes you susceptible to outside influences, be they from customers, investors, competition, press, or anything else. Without a big vision, you’ll lack purpose, and over time you’ll find yourself wandering aimlessly.

So if a big, hairy, audacious vision is important—one with a changing-the-world type goal—how does that reconcile with the step-by-step, always-questioning approach of Lean Startup?

The answer is actually pretty simple. You need to think of Lean Startup as the process you use to move toward and achieve your vision.

We sometimes remind early-stage founders that, in many ways, they aren’t building a product. *They’re building a tool to learn what product to build.* This helps separate the task at hand—finding a sustainable business model—from the screens, lines of code, and mailing lists they’ve carefully built along the way.

Lean Startup is focused on learning above everything else, and encourages broad thinking, exploration, and experimentation. It’s not about mindlessly going through the motions of *build→measure→learn*—it’s about really understanding what’s going on and being open to new possibilities.

Be Lean. Don’t be small. We’ve talked to founders who want to be the leading provider in their state or province. Why not the world? Even the Allies had to pick a beachhead, but landing in Normandy didn’t mean they lacked a big vision. They just found a good place to start.

Some people believe Lean Startup encourages that smallness, but in fact, used properly, Lean Startup helps *expand* your vision, because you’re encouraged to question everything. As you dig deeper and peel away more layers of what you’re doing—whether you’re looking at problems, solutions, customers, revenue, or anything else—you’re likely to find a lot more than you expected. If you’re opportunistic about it, you can expand your vision and understand how to get there faster, all at the same time.

PART TWO:

FINDING THE RIGHT METRIC FOR RIGHT NOW

You now have an understanding of analytics fundamentals. So let's talk about the importance of focus, about specific business models, and about the stages every startup goes through as it discovers the right product and the best target market. Armed with this, you'll be able to find the metrics that matter to you.

*It is the framework which changes with each new technology and
not just the picture within the frame.*

Marshall McLuhan

Analytics Frameworks

Over the years we've seen a number of frameworks emerge that help us understand startups and the changes they undergo as they grow, find their markets, and help startups acquire customers and revenue. Each framework offers a different perspective on the startup lifecycle, and each suggests a set of metrics and areas on which to focus.

After comparing and contrasting a number of these frameworks, we've created our own way to think about startups, and in particular the metrics that you use to measure your progress. We'll use this new framework throughout the book—but first, let's take a look at some of the existing frameworks and how they fit into Lean Analytics.

Dave McClure's Pirate Metrics

Pirate Metrics—a term coined by venture capitalist Dave McClure—gets its name from the acronym for five distinct elements of building a successful business. McClure categorizes the metrics a startup needs to watch into acquisition, activation, retention, revenue, and referral—AARRR.*

Figure 5-1 shows our interpretation of his model, describing the five steps through which users, customers, or visitors must progress in order for your company to extract all the value from them. Value comes not only from a

* <http://www.slideshare.net/dmc500hats/startup-metrics-for-pirates-long-version>

transaction (revenue) but also from their role as marketers (referral) and content creators (retention).



Figure 5-1. *Even pirates need metrics, says Dave McClure*

These five elements don’t necessarily follow a strict order—users may refer others before they spend money, for example, or may return several times before signing up—but the list is a good framework for thinking about how a business needs to grow (see Table 5-1).

Element	Function	Relevant metrics
Acquisition	Generate attention through a variety of means, both organic and inorganic	Traffic, mentions, cost per click, search results, cost of acquisition, open rate
Activation	Turn the resulting drive-by visitors into users who are somehow enrolled	Enrollments, signups, completed onboarding process, used the service at least once, subscriptions
Retention	Convince users to come back repeatedly, exhibiting sticky behavior	Engagement, time since last visit, daily and monthly active use, churns
Revenue	Business outcomes (which vary by your business model: purchases, ad clicks, content creation, subscriptions, etc.)	Customer lifetime value, conversion rate, shopping cart size, click-through revenue
Referral	Viral and word-of-mouth invitations to other potential users	Invites sent, viral coefficient, viral cycle time

Table 5-1. *Pirate Metrics and what you should track*

Eric Ries's Engines of Growth

In *Lean Startup*, Eric Ries talks about three engines that drive the growth of a startup. Each of these has associated *key performance indicators* (KPIs).

Sticky Engine

The sticky engine focuses on getting users to return, and to keep using your product. It's akin to Dave McClure's retention phase. If your users aren't sticky, churn will be high, and you won't have engagement. Engagement is one of the best predictors of success: Facebook's early user counts weren't huge, but the company could get nearly all students in a university to use the product, and to keep coming back, within a few months of launch. Facebook's stickiness was off the charts.

The fundamental KPI for stickiness is customer retention. Churn rates and usage frequency are other important metrics to track. Long-term stickiness often comes from the value users create for themselves as they use the service. It's hard for people to leave Gmail or Evernote, because, well, that's where they store all their stuff. Similarly, if a player deletes his account from a massively multiplayer online game (MMO), he loses all his status and in-game items, which he's worked hard to earn.

Stickiness isn't only about retention, it's also about frequency, which is why you also need to track metrics like time since last visit. If you have methods of driving return visits such as email notifications or updates, then email open rates and click-through rates matter, too.

Virality Engine

Virality is all about getting the word out. Virality is attractive because it compounds—if every user adds another 1.5 users, your user base will grow infinitely until you've saturated all users.*

The key metric for this engine is the *viral coefficient*—the number of new users that each user brings on. Because this is compounding (the users they bring, in turn, bring their own users), the metric measures how many users are brought in with each viral cycle. Growth comes from a viral coefficient of greater than one, but you also have to factor in churn and loss. The bigger the coefficient, the faster you grow.

* It's never really this simple; churn, competitors, and other factors mean it's not really infinite, of course.

Measuring viral coefficient isn't enough. You also need to measure the actions that make up the cycle. For example, when you join most social networks, you're asked to connect to your email account to find contacts, then you're given the option to invite them. They receive emails, which they might act upon. Those distinct stages all contribute to virality, so measuring actions is how you tweak the viral engine—by changing the message, simplifying the signup process, and so on.

There are other factors at play with virality as well, including the speed with which a user invites another (known as the *viral cycle time*) and the type of virality. We'll dive into these later in the book.

Paid Engine

The third engine of growth is payment. It's usually premature to turn this engine on before you know that your product is sticky and viral. Meteor Entertainment's *Hawken* is a multiplayer game that's free to play, but it makes money from in-game upgrades. Meteor is focusing on usage within a beta group first (stickiness), then working on virality (inviting your friends to play), and finally payment (players buying upgrades to become competitive or enhance the in-game experience).

Getting paid is, in some ways, the ultimate metric for identifying a sustainable business model. If you make more money from customers than it costs you to acquire them—and you do so consistently—you're sustainable. You don't need money from external investors, and you're growing shareholder equity every day.

But getting paid, on its own, isn't an engine of growth. It's just a way to put money in the bank. Revenue helps growth only when you funnel some of the money generated from revenue back into acquisition. Then you have a machine that you can tune to grow the business over time.

The two knobs on this machine are *customer lifetime value* (CLV) and *customer acquisition cost* (CAC). Making more money from customers than you spend acquiring them is good, but the equation for success isn't that simple. You still need to worry about cash flow and growth rate, which are driven by how long it takes a customer to pay off. One way to measure this is *time to customer breakeven*—that is, how much time it will take to recoup the acquisition cost of a customer.

Ash Maurya's Lean Canvas

We looked at the Lean Canvas in Chapter 3, when we talked about deciding what problem you should solve. See the sidebar “How to Use a Lean Canvas” for some tips on putting it into practice.

How to Use a Lean Canvas

Unlike a traditional business plan, you should use and update the Lean Canvas continuously. It's a "living, breathing" plan, not a hypothetical tome of nonsense that you throw out the minute you start actually working on your startup. Once you've filled out the Lean Canvas (or most of it), you start running experiments to validate or invalidate what you've hypothesized.

In its simplest form, think of each box as a "pass/fail": if your experiments fail, you don't go to the next box; rather, you keep experimenting until you hit a wall completely or get to the next step. The only exception is the "Key metrics" box, which is meant to keep a record of the most important metrics you're tracking. You don't run experiments on this box, but it's important to fill it out anyway because it's definitely open to debate and discussion.

Each of the boxes in Ash's canvas has relevant metrics you need to track, as outlined in Table 5-2 (the canvas actually has a box for metrics, which should get updated each time you focus on something different in the canvas). These metrics either tie your one-page business model to reality by confirming each box, or they send you back to the drawing board. The individual metrics may change depending on your type of business, but the guidelines are valuable just the same. We'll share more details later in the book on the key metrics that matter based on your type of business, as well as benchmarks you can aim for.

Lean Canvas box	Some relevant metrics
Problem	Respondents who have this need, respondents who are aware of having the need
Solution	Respondents who try the MVP, engagement, churn, most-used/least-used features, people willing to pay
Unique value proposition	Feedback scores, independent ratings, sentiment analysis, customer-worded descriptions, surveys, search, and competitive analysis
Customer segments	How easy it is to find groups of prospects, unique keyword segments, targeted funnel traffic from a particular source
Channels	Leads and customers per channel, viral coefficient and cycle, net promoter score, open rate, affiliate margins, click-through rate, PageRank, message reach

Lean Canvas box	Some relevant metrics
Unfair advantage	Respondents' understanding of the UVP (Unique Value Proposition), patents, brand equity, barriers to entry, number of new entrants, exclusivity of relationships
Revenue streams	Lifetime customer value, average revenue per user, conversion rate, shopping cart size, click-through rate
Cost structure	Fixed costs, cost of customer acquisition, cost of servicing the nth customer, support costs, keyword costs

Table 5-2. *Lean Canvas and relevant metrics*

Sean Ellis’s Startup Growth Pyramid

Sean Ellis is a well-known entrepreneur and marketer. He coined the term *growth hacker* and has been heavily involved with a number of meteoric-growth startups, including Dropbox, Xobni, LogMeIn (IPO), and Uproar (IPO). His Startup Growth Pyramid, shown in Figure 5-2, focuses on what to do *after* you’ve achieved product/market fit.

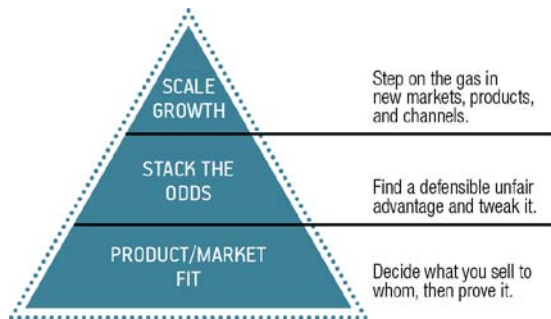


Figure 5-2. *Like building, real pyramid, startup growth is back-breaking labor*

The question this poses a of course, is how do you know if you’ve achieved product/market fit? Sean devised a simple survey that you can send customers (available at survey.io) to determine if you’re ready for accelerated growth. The most important question in the survey is “How would you feel if you could no longer use this product or service?” In Sean’s experience, if 40% of people (or more) say they’d be very disappointed to lose the service, you’ve found a fit, and now it’s time to scale.

The Long Funnel

In the early days of the Web, transactional websites had relatively simple conversion funnels. Visitors came to the home page, navigated to the product they wanted, entered payment information, and confirmed their order.

No more. Today’s funnel extends well beyond the front door of a website, across myriad social networks, sharing platforms, affiliates, and price-comparison sites. Both offline and online factors influence a single purchase. Customers may make several tentative visits prior to a conversion.

We call this the Long Funnel. It’s a way of understanding how you first come to someone’s attention, and the journey she takes from that initial awareness through to a goal you want her to complete (such as making a purchase, creating content, or sharing a message). Often, measuring a long funnel involves injecting some kind of tracking into the initial signal, so you can follow the user as she winds up on your site, which many analytics packages can now report. Figure 5-3 shows the Social Visitors Flow report in Google Analytics, for example.

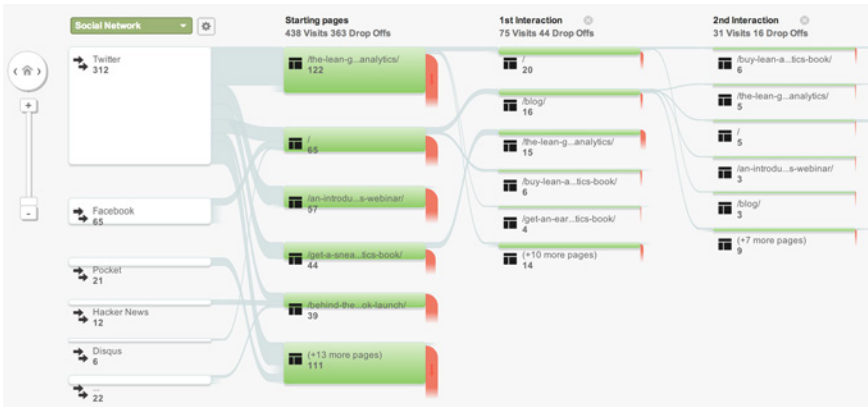


Figure 5-3. Where your paying customers waste most of their time before they buy from you

What’s more, overlapping traffic sources can show how much a particular platform influenced conversions, as shown in Figure 5-4.

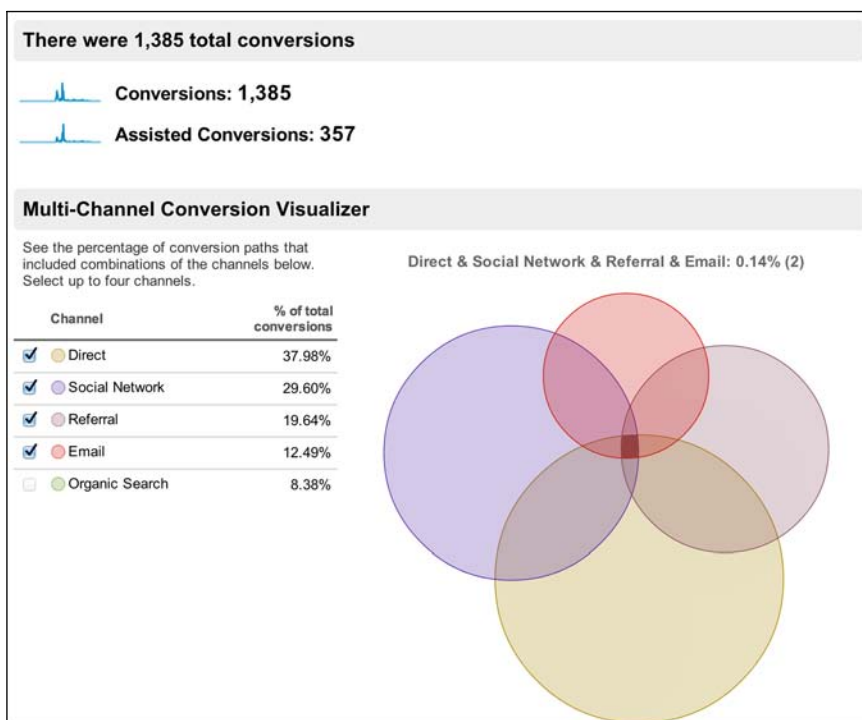


Figure 5-4. Sometimes it takes a lot of peer pressure to acquire a customer

We tracked our own long funnel during the process of launching the Lean Analytics Book website.* We didn't have a hard "goal" such as a purchase, but we did have a number of things we wanted visitors to do: sign up for our mailing list, click on the book cover, and take a survey. By creating custom URLs for our proponents to share, we injected a signal into the start of the Long Funnel, and were able to see how our message spread.

We learned, for example, that author and speaker Julien Smith's followers were less likely to fill out the survey than Eric Ries's and Avinash Kaushik's followers, unless they were returning visitors, in which case they were more likely to do so. This kind of insight can help us choose the right kind of proponent for future promotional efforts.

* <http://leananalyticsbook.com/behind-the-scenes-of-a-book-launch/>

The Lean Analytics Stages and Gates

Having reviewed these frameworks, we needed a model that identified the distinct stages a startup usually goes through, and what the “gating” metrics should be that indicate it’s time to move to the next stage. The five stages we identified are Empathy, Stickiness, Virality, Revenue, and Scale. We believe most startups go through these stages, and in order to move from one to the next they need to achieve certain goals with respect to the metrics they’re tracking.

Figure 5-5 shows the stages and gates of Lean Analytics, and how this model lines up with the other frameworks. A good portion of the book is structured by our stages, so it’s important to understand how this works.

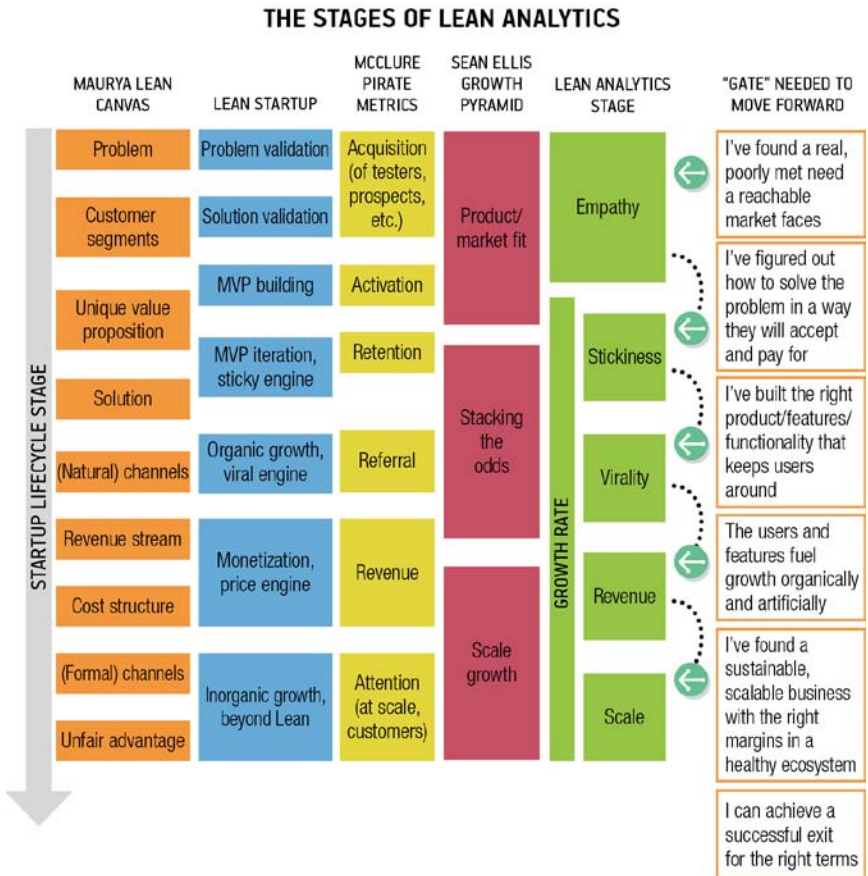


Figure 5-5. Frameworks, frameworks everywhere

Ultimately, there are a number of good frameworks that help you think about your business.

- Some, like Pirate Metrics and the Long Funnel, focus on the act of acquiring and converting customers.
- Others, like the Engines of Growth and the Startup Growth Pyramid, offer strategies for knowing when or how to grow.
- Some, like the Lean Canvas, help you map out the components of your business model so you can evaluate them independent of one another.

We're proposing a new model called the Lean Analytics Stages, which draws from the best of these models and puts an emphasis on metrics. It identifies five distinct stages startups go through as they grow.

While we believe the Lean Analytics Stages represent a fairly simple framework for understanding your startup's progress, we recognize that it can still look overwhelming. And even with our framework, you'll still use the other frameworks as well, so there's a lot to digest. That's why you should put all of this aside (for now!) and focus on the One Metric That Matters, which we'll cover in the next chapter.

The Discipline of One Metric That Matters

Founders are magpies, chasing the shiniest new thing they see. They often use the pivot as an enabler for chronic ADD, rather than as a way to iterate through ideas in a methodical fashion.

But one of the keys to startup success is achieving real focus and having the discipline to maintain it. You may succeed if you're unfocused, but it'll be by accident. You'll spend a lot more time wandering aimlessly, and the lessons learned are more painful and harder-won. If there's any secret to success for a startup, it's focus.

Focus doesn't mean myopia. We're not saying that there's only one metric you care about from the day you wake up with an idea to the day you sell your company. We are, however, saying that at any given time, there's one metric you should care about above all else. Boiled down to its very essence, Lean Startup is really about getting you to focus on the right thing, at the right time, with the right mindset.

As noted in Chapter 5, Eric Ries talks about three engines that drive company growth: the sticky engine, the viral engine, and the paid engine. But he cautions that while all successful companies will ultimately use all three engines, it's better to focus on one engine at a time. For example, you might make your product sticky for its core users, then use that to grow virally, and then use the user base to grow revenue. That's focus.

In the world of analytics and data, this means picking a single metric that's incredibly important for the step you're currently working through in your startup. We call this the One Metric That Matters (OMTM).

The OMTM is the one number you're completely focused on above everything else for your current stage. Looking at CLV (customer lifetime value) isn't meaningful when you're validating a problem, but it might be the right metric to focus on as you're approaching product/market fit.

You'll always track and review multiple numbers. Some will be important: these are your key performance indicators (KPIs), which you'll track and report every day. Others will be stored away for future use, such as when it's time to tell the company history to an investor or to make an infographic. Setting up and managing instrumentation is fairly easy these days with tools like Geckoboard, Mixpanel, Kissmetrics, Totango, Chartbeat, and others. But don't let your ability to track so many things distract you. *Capture everything, but focus on what's important.*

CASE STUDY

Moz Tracks Fewer KPIs to Increase Focus

Moz (previously known as SEOMoz) is a successful *Software as a Service* (SaaS) vendor that helps companies monitor and improve their websites' search engine rankings. In May 2012, the company raised \$18 million. Its CEO, Rand Fishkin, published a detailed post about the company's progress up to that point.* Rand's update did include a number of vanity metrics—when you have roughly 15 million visitors on your site each year, you have the right to a bit of vanity—but he also shared some very specific and interesting numbers related to conversions from free trials to paid subscriptions and churn.

We spoke with Joanna Lord, Vice President of Growth Marketing at Moz, to learn more about how the company handles metrics. “We are very metrics-driven,” she says. “Every team reports to the entire company weekly on KPIs, movement, and summaries. We also have a huge screen up in the office pumping out customer counts and free trial counts. We believe that having company-wide transparency into the metrics keeps us all informed, and is a great reminder of the progress (as well as the challenges) we are seeing as a company.”

For a company that's found product/market fit and is now focused on scaling, it becomes more challenging to focus on a single metric. This isn't surprising; there are multiple departments all growing quickly, and the business can tackle several different things simultaneously. But even with all these concurrent efforts, Joanna says that one metric

* <http://www.seomoz.org/blog/mozs-18-million-venture-financing-our-story-metrics-and-future>

stands above the rest: *Net Adds*. This metric is the total of new paid subscribers (either conversions from free trials or direct paid signups) minus the total who cancelled.

“Net Adds helps us quickly see high cancel days (and troubleshoot them) and helps us get a sense of how our free trial conversion rate is doing,” Joanna says.

Moz tracks other related metrics including Total Paying, New Free Trials Yesterday, and 7-Day Net Add Average. All of these really bubble up into Net Adds per day.

Interestingly, when Moz raised its last round of financing, one of its lead investors, the Foundry Group’s Brad Feld, suggested that it track fewer KPIs. “The main reason for this is that as a company, you can’t simultaneously affect dozens of KPIs,” Joanna says. “Brad reminded us that ‘too much data’ can be counterproductive. You can get lost in strange trends on numbers that aren’t as big-picture as others. You can also lose a lot of time reporting and communicating about numbers that might not lead to action. By stripping our daily KPI reporting down to just a few metrics, it’s clear what we’re focused on as a company and how we’re doing.”

Summary

- Moz is metrics-driven—but that doesn’t mean it’s swimming in data. It relies on one metric above all others: Net Adds.
- One of its investors actually suggested *reducing* the number of metrics the company tracks to stay focused on the big picture.

Analytics Lessons Learned

While it’s great to track many metrics, it’s also a sure way to lose focus. Picking a minimal set of KPIs on which your business assumptions rely is the best way to get the entire organization moving in the same direction.

Four Reasons to Use the One Metric That Matters

The OMTM is of most importance early on. Later, as your startup scales, you will want to focus on more metrics, and you’ll have the resources and experience to do so. Importantly, you’ll also have a team to whom you can delegate metrics. Your operations person might care about uptime or latency, your call center might worry about average time on hold, and so on.

At Year One Labs, one of the litmus tests for us as advisors and investors was the clarity with which a team understood, and tracked, their OMTM. If it was on the tip of their tongues, and aligned with their current stage, that was a good thing. If they didn't know what it was, if it was the wrong metric for their stage, if they had several metrics, or if they didn't know what the current value was, we knew something was wrong.

Picking the OMTM lets you run more controlled experiments quickly and compare the results more effectively. Remember: the One Metric That Matters changes over time. When you're focused on acquiring users (and converting them into customers), your OMTM may be tied to which acquisition channels are working best or the conversion rate from signup to active user. When you're focused on retention, you may be looking at churn, and experimenting with pricing, features, improving customer support, and so on. The OMTM changes depending on your current stage, and in some cases it will change quickly.

Let's look at four reasons why you should use the One Metric That Matters.

- **It answers the most important question you have.** At any given time, you'll be trying to answer a hundred different questions and juggling a million things. You need to identify the riskiest areas of your business as quickly as possible, and that's where the most important question lies. When you know what the right question is, you'll know what metric to track in order to answer that question. That's the OMTM.
- **It forces you to draw a line in the sand** and have clear goals. After you've identified the key problem on which you want to focus, you need to set goals. You need a way of defining success.
- **It focuses the entire company.** Avinash Kaushik has a name for trying to report too many things: data puking.* Nobody likes puke. Use the OMTM as a way of focusing your entire company. Display your OMTM prominently through web dashboards, on TV screens, or in regular emails.
- **It inspires a culture of experimentation.** By now you should appreciate the importance of experimentation. It's critical to move through the *build→measure→learn* cycle as quickly and as frequently as possible. To succeed at that, you need to actively encourage experimentation. It will lead to small-*f* failures, but you can't punish that. Quite the opposite: failure that comes from planned, methodical testing is simply how you learn. It moves things forward in the end. It's how you avoid

* <http://www.kaushik.net/avinash/difference-web-reporting-web-analysis/>

big-*F* Failure. Everyone in your organization should be inspired and encouraged to experiment. When everyone rallies around the OMTM and is given the opportunity to experiment independently to improve it, it's a powerful force.

CASE STUDY | Solare Focuses on a Few Key Metrics

Solare Ristorante is an Italian restaurant in San Diego owned by serial entrepreneur Randy Smerik. Randy has a background in technology and data, once served as the general manager for business intelligence firm Teradata, and has five technology exits under his belt. It's no surprise that he's brought his data-driven mindset to the way he runs the business.

One evening at the restaurant, Randy's son Tommy—who manages the bar—yelled out, “24!” Since we're always looking for stories about business metrics, we asked him what the number meant. “Every day, my staff tells me the ratio of staff costs to gross revenues for the previous day,” he explained. “This is a fairly well-known number in the restaurant industry. It's useful because it combines two things you have a degree of control over—per-diner revenues and staffing costs.”

Randy explained when staffing costs exceed 30% of gross revenues, that's bad, because it means that you're either spending too much on staff or not deriving enough revenue per customer. A Michelin-starred restaurant can afford to have more staff, and pay them more, because it sells customers expensive wines and enjoys good per-customer revenue. At the other end of the spectrum, a low-margin casual dining restaurant has to keep staff costs down.

The ratio works because it's:

- **Simple:** It's a single number.
- **Immediate:** You can generate it every night.
- **Actionable:** You can change staffing, or encourage upselling, the very next day, whereas ingredient costs, menus, or leasing take longer to modify.
- **Comparable:** You can track it over time, and compare it to other restaurants in your category.
- **Fundamental:** It reflects two basic facets of the restaurant business model.

As it turns out, 24% is about right. Below 20%, there's a chance that you're under-serving customers and that their dining experience might

suffer (Randy could experiment with different staffing levels and measure the tips diners leave, or comments on Yelp, if he wanted to be really analytical).

Randy also uses a second metric to predict how many customers he'll have. At 5 p.m. every day, his staff sends him the number of reservations that have currently been made for the evening. "If I get 50 reservations at 5 p.m., I know I'll have around 250 covers that night," he says. "We've learned that a 5-to-1 ratio is normal for Solare."

This number doesn't work across all restaurants—the in-demand Michelin-starred restaurant has a 1-to-1 ratio, since it's sold out, and a fast food restaurant that doesn't take reservations obviously can't use the metric. But for Solare reservations at 5 p.m., plus some experience, provides a good leading indicator of what the night will be like. It also allows the Solare team to make small adjustments to staffing or buy additional produce in time to ensure that the restaurant can handle the traffic.

Summary

- Restaurants know from experience that demand is tied to reservations, and what the right ratio of staffing to revenue should be.
- Good metrics help predict the future, giving you an opportunity to anticipate problems and correct them.

Analytics Lessons Learned

Even non-technical businesses need to find a few, simple metrics that relate to their core business model, then track them over time to predict what's going to happen and identify patterns or trends.

Drawing Lines in the Sand

Knowing which metric to focus on isn't enough. You need to draw a line in the sand as well. Let's say that you've decided "New Customers Per Week" is the right metric to focus on because you're testing out new ways of acquiring customers. That's fair, but it doesn't answer the real question: *How many new customers per week do you need?* Or more specifically: *How many new customers per week (per acquisition channel) do you think defines a level of success that enables you to double down on user acquisition and move to the next step in the process?*

You need to pick a number, set it as the target, and have enough confidence that if you hit it, you consider it success. And if you don't hit the target, you need to go back to the drawing board and try again.

Picking the target number for any given metric is extremely hard. We've seen many startups struggle with this. Often, they avoid picking a number altogether. Unfortunately, this means it's difficult to know what to do once an experiment is completed. If, in our example, the user acquisition experiment is a dismal failure, any number you had picked beforehand is probably immaterial; you'll know it's a failure. And if your efforts are insanely successful, you're going to know that as well. It'll be obvious. But most of the time, experiments end up right in the big fat middle. There was some success, but it wasn't out of this world. Was it enough success to keep going, or do you have to go back and run some new experiments? That's the trickiest spot to be in.

There are two right answers to the question of what success looks like. The first comes from your business model, which may tell you what a metric has to be. If you know that you need 10% of your users to sign up for the paid version of your site in order to meet your business targets, then that's your number.

In the early stages of your business, however, you're still figuring out what your business model should look like. It won't tell you precisely what you need. The second right answer is to look at what's normal or ideal. Knowing an industry baseline means you know what's likely to happen, and you can compare yourself to it. In the absence of any other information, this is a good place to start. We'll share some industry benchmarks that may be helpful to you later in the book.

The Squeeze Toy

There's another important aspect to the OMTM. And we can't really explain it better than with a squeeze toy.

If you optimize your business to maximize one metric, something important happens. Just like one of those bulging stress-relief squeeze toys, squeezing it in one place makes it bulge out in another. And that's a good thing. Optimizing your OMTM not only squeezes that metric so you get the most out of it, but it also reveals the next place you need to focus your efforts, which often happens at an inflection point for your business:

- Perhaps you've optimized the number of enrollments in your gym, and you've done all you can to maximize revenues—but now you need to focus on cost per customer so you turn a profit.

- Maybe you've increased traffic to your site—but now you need to maximize conversion.
- Perhaps you have the foot traffic in your coffee shop you've always wanted—but now you need to get people to buy several coffees rather than just stealing your Wi-Fi for hours.

Whatever your current OMTM, expect it to change. And expect that change to reveal the next piece of data you need to build a better business faster.

EXERCISE | Define Your OMTM

Can you pick the One Metric That Matters for your startup? Give it a try. If you did the exercise at the end of Chapter 2, you have a short list of good metrics you track; now pick the one you couldn't live without.

Could your entire company work exclusively on improving that metric? What might break if you did? Could you draw a line in the sand to measure results? If not, that's OK. For now, write down your One Metric That Matters and where it currently stands, and we'll come back to the line later.

What Business Are You In?

How you get and make money drives what metrics you should care about. In the long term, the riskiest part of a business is often directly tied to how it makes money.

Many startups can build a product and solve technical issues, some can attract the right (and occasionally large) audiences, but few make money. Even giants like Twitter and Facebook have struggled with extracting money from their throngs of users.

There's no more iconic symbol of a startup than the lemonade stand, and with good reason—it's a simple, entrepreneurial, low-risk way to learn how businesses operate. And like a lemonade stand, while it might be reasonable and strategic to delay monetization—giving away lemonade for a while to build a clientele—you have to be planning your business model early on.

If we asked you to describe the business model of a lemonade stand, you'd probably say that it's about selling lemonade for more than it costs to make it. Pressed for more detail, you might say that costs include:

- Variable costs of materials (lemons, sugar, cups, water)
- One-time costs of marketing (stand, signage, cooler, bribing a younger sibling to stand in the street)
- Hourly costs of staffing (which, let's face it, are pretty negligible when you're a kid)

You might also say that revenue is a function of the price you charge, and the number of cups sold.

Now let's suppose that you're asked to identify the risky parts of the business. They include the variability of citrus futures, the weather, the foot traffic in your neighborhood, and so on.

One thing we've noticed about almost all successful founders we've met is their ability to work at both a very detailed, and a very abstracted, level within their business. They can worry about the layout of a page or the wording of an email subject one day, and consider the impact of one-time versus monthly recurring sales the next. That's partly because they're not only trying to run a business, they're also trying to discover the best business model.

To decide which metrics you should track, you need to be able to describe your business model in no more complex a manner than a lemonade stand's. You need to step back, ignore all the details, and just think about the really big components.

When you reduce things to their basic building blocks in this way, you come up with only a few fundamental business models on the Web. Interestingly, all of them share some common themes. First, their aim is to grow (in fact, Paul Graham says that a focus on growth is the one defining attribute of a startup).^{*} And second, that growth is achieved by one of Eric Ries's fundamental Engines of Growth: an increase in stickiness, virality, or revenue.

Each business model needs to maximize the thrust from these three engines in order to flourish. Sergio Zyman, Coca-Cola's CMO, said marketing is about *selling more stuff to more people more often for more money more efficiently*.[†]

Business growth comes from improving one of these five “knobs”:

- **More stuff** means adding products or services, preferably those you know your customers want so you don't waste time building things they won't use or buy. For intrapreneurs, this means applying Lean methods to new product development, rather than starting an entirely new company.
- **More people** means adding users, ideally through virality or word of mouth, but also through paid advertising. The best way to add users is when it's an integral part of product use—such as Dropbox, Skype, or a project management tool that invites outside users outsiders—

^{*} <http://paulgraham.com/growth.html>

[†] <http://www.zibs.com/zyman.shtml>

since this happens automatically and implies an endorsement from the inviting user.

- **More often** means stickiness (so people come back), reduced churn (so they don't leave), and repeated use (so they use it more frequently). Early on, stickiness tends to be a key knob on which to focus, because until your core early adopters find your product superb, it's unlikely you can achieve good viral marketing.
- **More money** means upselling and maximizing the price users will pay, or the revenue from ad clicks, or the amount of content they create, or the number of in-game purchases they make.
- **More efficiently** means reducing the cost of delivering and supporting your service, but also lowering the cost of customer acquisition by doing less paid advertising and more word of mouth.

About Those People

Business models are about getting people to do what you want in return for something. *But not all people are equal.* The plain truth is that not every user is good for you.

- Some are good—but only in the long term. Evernote's freemium model works partly because users eventually sign up for paying accounts, but it can take them two years to do so.
- Some provide, at best, free marketing, and while they may never become paying users, they may amplify your message or invite someone who will pay.
- Some are downright bad—they distract you, consume resources, spam your site, or muddy your analytics.

When you get a wave of visibility, few of the resulting visitors will actually engage with your product. Many are just driving by. As Vinicus Vacanti, co-founder and CEO of Yipit, recalls in a blog post inspired by his company's 2010 launch:^{*}

Was that our big launch? Why didn't more people sign up? Why didn't people complete the sign-up flow? Why weren't people coming back? Now that people covered our startup, how are we supposed to get more press? Why aren't our users pushing their actions to Facebook and Twitter? We got some users to invite their friends but why aren't their friends accepting the invite?

* <http://viniciusvacanti.com/2012/11/19/the-depressing-day-after-you-get-techcrunched/>

The key here is analytics. You need to segment real, valuable users from drive-by, curious, or detrimental ones. Then you need to make changes that maximize the real users and weed out the bad ones. That may be as blunt as demanding a credit card up front—a sure way to reject curious users who don’t have any intention of committing or paying. Or it may be a subtler approach, such as not trying to reactivate disengaged users once they’ve been gone for a while.

If you’re a developer of a game that users play once, or an e-commerce site stocking rarely purchased items, that’s fine—just get your money up front. If you’re a SaaS provider with low incremental costs for additional users, freemium may work, as long as you clearly separate engaged from casual users. If you expect buyers to purchase from you often, you need to make them feel loved. You get the picture.

Segmenting real users from casual ones also depends on how much effort your users have to put into using the application. Some products collect information passively: Fitbit logs walking steps; Siri notices when you’ve arrived somewhere; Writethatname analyzes your inbox for new contacts. Users don’t have to do much, so it can be hard to tell if they’ve “checked out.” It’s easier to find disengaged users if they have to actively use the product.

Consider the aforementioned Fitbit, a tiny life-logging device that measures steps, from which it calculates calories burned, miles walked, stairs climbed, and overall activity.

Fitbit users can simply record their steps with a device in their pocket, they can use it to sync data to the company’s hosted application, they can visit the portal to see their statistics and share them with friends, they can manually enter sleep and food data to augment what’s collected passively, and they can buy the premium Fitbit offering to help them reach their health goals.

Each of these use models represents a different tier of engagement, and Fitbit could segment users across these five segments. And it should: it’s perfectly acceptable for a Fitbit user to only use the clip-on device to record the number of steps taken per day, without ever uploading that information, but as a result the company won’t be able to monetize that user beyond the initial purchase (through on-site ads, premium subscriptions, or selling aggregate user data, for example). The value of that user is significantly lower. Predicting revenues accurately relies on an understanding of how its different user segments employ the product.

As a startup, you have a wide range of payment and incentive models from which to choose: freemium, free trial, pay up-front, discount, ad-funded, and so on. Your choice needs to match the kind of segmentation you’re doing, the time it takes for a user to become a paying customer, how easy it

is to use your service, and how costly an additional drive-by user is to the business.

Not all customers are good. Don't fall victim to customer counting. Instead, optimize for *good* customers and segment your activities based on the kinds of customer those activities attract.

The Business Model Flipbook

A product is more than the thing you buy. It's the mix of service, branding, fame, street cred, support, packaging, and myriad other factors you pay for. When you purchase an iPhone, you're also getting a tiny piece of Steve Jobs's persona.

In the same way, a business model is a combination of things. It's what you sell, how you deliver it, how you acquire customers, and how you make money from them.

Many people blur these dimensions of a business model. We're guilty of it, too. Freemium isn't a business model—it's a marketing tactic. SaaS isn't a business model—it's a way of delivering software. The ads on a media site aren't a business model—they're a way of collecting revenue.

Later in the book we're going to outline six sample businesses. But before we do that, we want to talk about how we came up with them. Think of one of the flipbooks you had as a kid—the kind where you could combine different body parts on each page to make different characters.

You can build business models this way, but instead of heads, torsos, and feet, you have several aspects of a business: the acquisition channel, selling tactic, revenue source, product type, and delivery model.

- The **acquisition channel** is how people find out about you.
- The **selling tactic** is how you convince visitors to become users or users to become customers. Generally, you either ask for money or you provide some kind of scarcity or exclusivity—such as a time limit, a capacity limit, the removal of ads, additional functionality, or the desire to keep things to themselves—to convince them to act.
- The **revenue source** is simply how you make money. Money can come from your customers directly (through a payment) or indirectly (through advertising, referrals, analysis of their behavior, content creation, and so on). It can include transactions, subscriptions, consumption-based billing charges, ad revenue, resale of data, donations, and much more.
- The **product type** is what value your business offers in return for the revenue.

- The **delivery model** is how you get your product to the customer.

Figure 7-1 shows these five aspects, with a variety of models and examples for each one. Remember that this is only a set of examples—most businesses will rely on several acquisition channels, or experiment with different revenue models, or try various sales tactics.

ACQUISITION CHANNEL	How the visitor, customer, or user finds out about the startup	<ul style="list-style-type: none"> • Paid advertising • Search engine mgmt. • Social media outreach • Inherent virality • Artificial virality • Affiliate marketing • Public relations • App/ecosystem mkt. 	<ul style="list-style-type: none"> • Banner on Informationweek.com • High pagerank for ELC in kids' toys • Active on Twitter (i.e., Kissmetrics) • Inviting team member to Asana • Rewarding Dropbox user for others' signups • Sharing a % of sales with a referring blogger • Speaker submission to SXSW • Placement in the Android market
SELLING TACTIC	What the startup does to convince the visitor or user to become a paying customer	<ul style="list-style-type: none"> • Simple purchase • Discounts & incentives • Free trial • Freemium • Pay-for-privacy • Free-to-play 	<ul style="list-style-type: none"> • Buying a PC on Dell.com • Black Friday discount, loss leader, free ship • Time-limited trial such as Fitbit Premium • Free tier, relying on upgrades, like Evernote • Free account content is public, like Slideshare • Monetize in-app purchases, like Airmech
REVENUE MODEL	How the startup extracts money from its visitors, users, or customers	<ul style="list-style-type: none"> • One-time transaction • Recurring subscription • Consumption charges • Advertising clicks • Resale of user data • Donation 	<ul style="list-style-type: none"> • Single purchase from Fab • Monthly charge from Freshbooks • Compute cycles from Rackspace • PPC revenue on CNET.com • Twitter's firehose license • Wikipedia's annual campaign
PRODUCT TYPE	What the startup does in return. May be a product or service; may be hardware or software; may be a mixture	<ul style="list-style-type: none"> • Software • Platform • Merchandising • User-generated content • Marketplace • Media/content • Service 	<ul style="list-style-type: none"> • Oracle's accounting suite • Amazon's EC2 cloud • Thinkgeek's retail store • Facebook's status update • Airbnb's list of house rentals • CNN's news page • A hairstylist
DELIVERY MODEL	How the product gets to the customer	<ul style="list-style-type: none"> • Hosted service • Digital delivery • Physical delivery 	<ul style="list-style-type: none"> • Salesforce.com's CRM • Valve purchase of desktop game • Knife shipped from Sur La Table

Figure 7-1. Just like the flipbooks you had as a kid, with more words

Lots to Choose From

There is an abundance of “pages” you can put into the flipbook. The team at Startup Compass, a startup dedicated to helping companies make better business decisions with data, identifies 12 revenue models: advertising, consulting, data, lead generation, licensing fee, listing fee, ownership/hardware, rental, sponsorship, subscription, transaction fee, and virtual goods. Venture capitalist Fred Wilson has a document listing a vast number

of web and mobile revenue models, many of which are variants on six basic ones we'll list later in the book.*

Startup Compass also suggests some “fundamental” financial models that combine several pages from the flipbook: search, gaming, social network, new media, marketplace, video, commerce, rental, subscription, audio, lead generation, hardware, and payments.

You can use these “pages” to create a back-of-the-napkin business model. For example, Figure 7-2 shows a sample business model flipbook for Dropbox.

BUSINESS ASPECT	FLIPBOOK PAGE(S)	DROPBOX EXAMPLE
ACQUISITION CHANNEL	<ul style="list-style-type: none"> • Inherent virality • Artificial virality 	<ul style="list-style-type: none"> • Sharing files with others • Free storage when others sign up
SELLING TACTIC	<ul style="list-style-type: none"> • Freemium 	<ul style="list-style-type: none"> • Limited-capacity accounts are free; subscribe when you need more
REVENUE MODEL	<ul style="list-style-type: none"> • Recurring subscription 	<ul style="list-style-type: none"> • \$99/year, monthly fees, enterprise tiers
PRODUCT TYPE	<ul style="list-style-type: none"> • Platform 	<ul style="list-style-type: none"> • Storage-as-a-service with APIs, collaboration, synchronization tools
DELIVERY MODEL	<ul style="list-style-type: none"> • Hosted service • Digital delivery 	<ul style="list-style-type: none"> • Cloud storage, web interface • Desktop client software

Figure 7-2. Turning the flipbook pages to Dropbox

There's another advantage of stating business models in a flipbook structure like this: it encourages lateral thinking. Each turn of a “page” is a pivot: what would it mean to offer Dropbox as a physical delivery? Or to charge up front for it? Or to rely on paid advertising?

Six Business Models

In the coming chapters, we're going to look at six business models. Each model is a blend of these aspects, and we've tried to mix them up enough to give you a taste of some common examples. But just like a kid's flipbook, there's a huge variety: from the aforementioned list, there are over 6,000 permutations, and our list of aspects isn't by any means exhaustive.

* <https://hackpad.com/Ch2paBpUyIU#Web-and-Mobile-Revenue-Models>

As if that weren't confusing enough, you can employ several at once: Amazon is a transactional, physical-delivery, SEM (search engine marketing), simple-purchase retailer, but it's also running sub-businesses such as user-generated content in the form of product reviews. So unlike those relatively simple children's books, your business can quite easily be a many-headed monster.

In the face of this complexity, we've decided to keep our six business models simple. We'll talk about several aspects of those businesses, and the metrics that matter most to companies of each sort. Think of it as opening the business model flipbook to a particular "page"—one in which you see elements of your own business.

- If you're running an e-commerce business where you sell things to customers, turn to Chapter 8.
- If you're delivering SaaS to users, turn to Chapter 9.
- If you're building a mobile application and using in-app purchases to generate revenue, head to Chapter 10.
- If you're creating content and making money from advertising, you'll find details on media sites in Chapter 11.
- If your primary focus is getting your users to generate content on your platform the way Twitter, Facebook, or reddit do, turn to Chapter 12.
- If you're building a two-sided marketplace where buyers and sellers can come together, check out Chapter 13.

Most businesses fall into one of these categories. Some won't, but they have close parallels in the real world. A restaurant is transactional, like e-commerce; an accounting business offers a recurring service, like a SaaS company, and so on. Hopefully, you'll find a model that's close enough for you to learn important lessons about analytics and apply them to your business, as we review the stages of growth in Chapter 14 and beyond.

EXERCISE | Pick Your Business Model

In the following chapters we go through six sample business models. Find yours and write it down, then list all the metrics we define in that business model and see how well that aligns with what you're tracking. For the metrics that you're tracking, put down the values as they stand today, if you haven't already. If your business overlaps on a couple of models (which isn't uncommon), then grab metrics from each of those models and include them in this exercise.

Model One: E-commerce

In an e-commerce company, a visitor buys something from a web-based retailer. This is perhaps the most common kind of online business, and it's certainly the one that the majority of traditional analytics tools are aimed at. Big retailers like Amazon, Walmart.com, and Expedia are all e-commerce companies.

If the e-commerce model most closely matches your business, this chapter will show you some of the most important metrics you need to watch, as well as some “wrinkles” that make the analytics more complex.

Early e-commerce models consisted of a relatively simple “funnel”: a visitor arrived at the site, navigated through a series of pages to get to a particular item, clicked “buy,” provided some payment information, and completed a purchase. This is the traditional “conversion funnel” from which mainstream analytics packages like Omniture and Google Analytics emerged.

But modern e-commerce is seldom this simple:

- The majority of buyers find what they're looking for through search rather than by navigating across a series of pages. Shoppers start with an external search and then bounce back and forth from sites they visit to their search results, seeking the scent of what they're after. Once they find it, on-site navigation becomes more important. This means on-site funnels are somewhat outdated; keywords are more important.

- Retailers use recommendation engines to anticipate what else a buyer might want, basing their suggestions on past buyers and other users with similar profiles. Few visitors see the same pages as one another.
- Retailers are always optimizing performance, which means that they're segmenting traffic. Mid- to large-size retailers segment their funnel by several tests that are being run to find the right products, offers, and prices.
- Purchases begin far from the website itself, in social networks, email inboxes, and online communities, making the buying process harder to track.

E-commerce companies make money in a straightforward way: they charge for products, which they then deliver either electronically (e.g., digital downloads on iTunes) or physically (e.g., shipping shoes from Zappos). They spend money to acquire customers through advertising and affiliate referrals. Prices are set based on what the market will bear, or on expectations set by competitors. Some large retailers with the budget and time to invest in it will generate prices algorithmically based on supply, demand, and constant testing, which in some cases leads to absurd pricing* or recommendations based on factors such as browser type.

Loyalty-focused e-retailers like Amazon build a recurring relationship with their users. They have a wide variety of products to offer, and buyers return often, so they do everything they can to make purchasing simple and automatic (in Amazon's case, the company patented the one-click purchase model, which it now licenses to other retailers, including Apple).

These relationship-focused e-commerce companies encourage users to build wishlists and review products, which means that while their core business model is e-commerce, they care about other models, such as user-generated content (UGC), too—as long as those models act as an enabler for purchases. On the other hand, e-commerce retailers that don't expect frequent, repeat sales focus on getting as much from their buyer as they can and on getting the buyer to spread the word.

PATTERN | **What Mode of E-commerce Are You?**

Kevin Hillstrom of Mine That Data, a consultancy focused on helping companies understand how their customers interact with advertising,

* In his post "Amazon's \$23,698,655.93 book about flies," UC Berkeley biologist Michael Eisen explains how algorithmic price wars between book merchants drove the price of a textbook on flies up to \$23 million dollars (<http://www.michaelseisen.org/blog/?p=358>).

products, brands, and channels, works with a number of e-commerce companies. He says it's essential for online retailers to know what kind of relationship they have with their buyers, because this drives everything from marketing strategy to shopping cart size. To understand this, he calculates the *annual repurchase rate*: what percentage of people who bought something from you last year will do so this year?

Acquisition mode

If less than 40% of last year's buyers will buy this year, then the focus of the business is on new customer acquisition. Loyalty programs aren't good long-term investments for this kind of business. Kevin says that 70% of e-commerce businesses fall into this category when they're mature. Vendors of scuba or rock climbing equipment might be a great example of this: many of their customers buy gear once, and don't get so hooked on the hobby that they need to upgrade. That's not a bad thing—it just dictates marketing strategy. An online vendor of eyewear might put more of its marketing efforts into convincing past buyers to refer others, and less into convincing those buyers to purchase multiple pairs of glasses, for example.

Hybrid mode

If 40–60% of last year's buyers will buy this year, then the company will grow with a mix of new customers and returning customers. It needs to focus on acquisition as well as on increasing purchase frequency—the average customer will buy 2 to 2.5 times a year. Zappos is a hybrid model e-commerce company.

Loyalty mode

If 60% or more of last year's buyers will buy something this year, the company needs to focus on loyalty, encouraging loyal clients to buy more frequently. Loyalty programs work well only if the retailer has this kind of engagement, and only 10% of e-commerce businesses end up in this mode when mature. Amazon is a good example of a company in this mode.

The annual repurchase rate is an early indicator of how an e-commerce startup will succeed in the long term. Even before a year has elapsed, an e-commerce company can look at 90-day repurchase rates and get a sense of which model it's in.

- A 90-day repurchase rate of 1% to 15% means you're in acquisition mode.

- A 90-day repurchase rate of 15% to 30% means you're in hybrid mode.
- A 90-day repurchase rate of over 30% means you're in loyalty mode.

There's nothing particularly bad about any of these models. Kevin has clients where only 25% of this year's buyers will purchase something next year. These clients are successful because they know they need a large number of new customers at relatively low costs, and they concentrate all of their marketing efforts around reliable, affordable customer acquisition.

"It doesn't matter whatsoever what mode a business is in. But it means *everything* for the CEO to know what mode he or she is in," Kevin says. "I see too many leaders trying to increase loyalty. If you're in acquisition mode, you probably can't—and shouldn't try to—increase loyalty. The average customer only needs a couple of pairs of jeans a year, for instance. You can't force the customer to buy more! Knowing your customer and mode is really important."

Kevin says he frequently sees business leaders with seasonal e-commerce properties trying to convince customers to buy gifts off-season. "It doesn't work," he says. "They're in acquisition mode. They're better off creating awareness during the year so that they get new customers in November and December."

While it's important to optimize revenues, don't try to make your customers into something they're not. "I don't try to force my customer to do things my customer isn't pre-inclined to do. With Zappos, for example, I wouldn't necessarily try to push my customer from hybrid mode to loyalty mode. But I do try to improve customer service (free returns), and that brings in new customers (half of hybrid mode success) who feel comfortable with my business," says Kevin. "If I am in acquisition mode, then I will still try to improve service and merchandise and the like, but I know that my primary goal is to always get new customers, even once my business is mature."

Kevin says it's difficult to move the annual repurchase rate by more than 10%, despite a company's best efforts. "If the annual repurchase rate is 30%, it will vary between 27% and 33%," he says.

With the rise of social networks and sites like Facebook and Pinterest, which can refer visitors, e-commerce companies are increasingly interested in a long funnel that begins with a tweet, a video, or a link, and ends with a purchase. Online retailers need to understand what messages, on what

platforms, generate the kinds of visitors who buy things. Once they're on the site, the emphasis is on maximizing the amount of stuff a buyer will purchase.

Getting pricing right is critical—particularly if you're an acquisition-mode e-commerce site that gets only one chance to extract revenue from a customer. A 1992 study on business optimization by management consulting firm McKinsey compared the impact of improving different aspects of the business on operating profit.*

As Figure 8-1 illustrates, getting pricing right has a huge impact on the overall profitability of a business. A later study conducted in 2003 suggested a smaller impact of only 8%—but one that still far outstripped other efforts.†

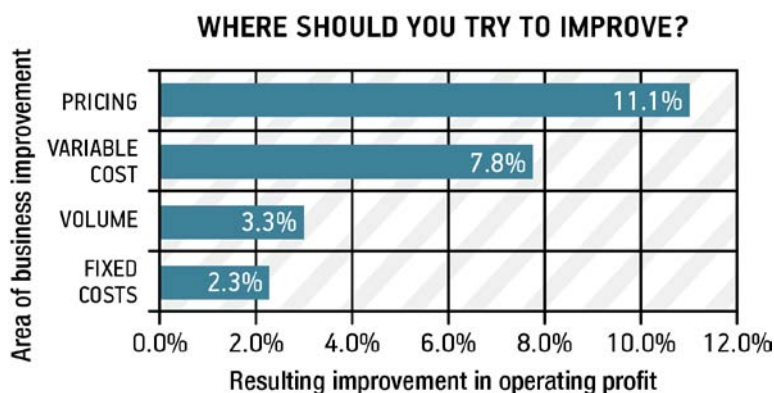


Figure 8-1. Want to fix your business? Get the price right

A Practical Example

Consider an online luxury goods store. Subscribers to the site get exclusive deals at reduced prices for items that are curated by the site's operators. Visitors to the site can browse what's available, but must sign up to place an order or put something in a shopping cart; by signing up, they agree to receive a daily email update. Visitors can also tweet or like something they see on the site.

The company cares about several key metrics:

* <http://hbr.org/1992/09/managing-price-gaining-profit/ar/8>

† <http://download.mckinseyquarterly.com/pop03.pdf>

Conversion rate

The number of visitors who buy something.

Purchases per year

The number of purchases made by each customer per year.

Average shopping cart size

The amount of money spent on a purchase.

Abandonment

The percentage of people who begin to make a purchase, and then don't.

Cost of customer acquisition

The money spent to get someone to buy something.

Revenue per customer

The lifetime value of each customer.

Top keywords driving traffic to the site

Those terms that people are looking for, and associate with you—a clue to adjacent products or markets.

Top search terms

Both those that lead to revenue, and those that don't have any results.

Effectiveness of recommendation engines

How likely a visitor is to add a recommended product to the shopping cart.

Virality

Word of mouth, and sharing per visitor.

Mailing list effectiveness

Click-through rates and ability to make buyers return and buy.

More sophisticated retailers care about other metrics such as the number of reviews written or the number considered helpful, but this is really a secondary business within the organization, and we'll deal with these when we look at the user-generated content model in Chapter 12. For now, let's look at the preceding metrics in a bit more detail.

Conversion Rate

Conversion rate is simply the percentage of visitors to your site who buy something. It's one of the first metrics you use to assess how you're doing. It's simple to calculate and experiment with. You'll slice conversion rate in many ways—by demographics, by copy, by referral, and so on—to see what makes people more likely to buy.

Early on, conversion rate may even be more important than total revenue because your initial goal is to simply prove that someone will buy something (and it gives you that person's email address and data on what he purchases). But there's also a risk in focusing too intensely on conversion rate. Conversion rate is highly dependent on your type of e-commerce business, and whether your success will be driven by loyalty, new customer acquisition, or a hybrid of the two.

Purchases Per Year

While conversion rate is important, it doesn't tell the whole story. There are many examples of e-commerce sites with high or low conversion rates that are successful. It depends on the type of e-commerce site and how people buy. A store that sells coffins probably sells only one per lifetime; a grocery store sells to a customer several times a week.

If you look at the repurchase rate on a 90-day cycle, it becomes a very good leading indicator for what type of e-commerce site you have. There's no right or wrong answer, but it is important to know whether to focus more on loyalty or more on acquisition.

Shopping Cart Size

The other half of the conversion rate equation is the size of the shopping cart. Not only do you want to know what percentage of people bought something, you also want to know how much they spent. You may find that one campaign is more likely to make people buy, but another might make fewer people spend more money.

In practice, you'll compare the total revenue you're generating to the way in which you acquired that revenue, in order to identify the most lucrative segments of your reachable audience. But don't get too caught up in top-line revenue; profit is what really matters.

Bill D'Alessandro of Skyway Ventures, a private investment firm focused on e-commerce companies, says, "The key to successful e-commerce is in increasing shopping cart size; that's really where the money is made. I like to think of customer acquisition cost as a fixed cost, so any increase in order size is expanding your margin."

Abandonment

Not everyone buys something. At its simplest, abandonment rate is the opposite of conversion rate. But a purchasing process often has several steps—reviewing items in a shopping cart, providing shipping information, entering billing details, and so on. In some cases, the process may even involve a third-party site: Kickstarter sends users to Amazon to provide their credit card information, and Eventbrite links to PayPal so buyers can pay for tickets.

The number of people who abandon a funnel at each of these stages is the abandonment rate. It's important to analyze it for each step in order to see which parts of the process are hurting you the most. In some cases, this may be a particular form field—for example, asking people for their nationality could be alienating buyers. Tools like ClickTale perform abandonment analysis within the form itself, making it easier to pinpoint bottlenecks in the conversion process where you're losing customers.

Cost of Customer Acquisition

Once you know you can extract money from visitors, you'll want to drive traffic to the site. You may be using advertising, social media outreach, mailing lists, or affiliates. Whatever the case, you're going to need to add it up. E-commerce sites are simple math: make more from selling things than it costs you to find buyers and deliver the goods.

Accounting for the cost of acquisition in aggregate is fairly easy; it's more complicated when you have myriad channels driving traffic to your site. The good news is that analytics tools were literally built to do this for you. The reason Google has a free analytics product is because the company makes money from relevant advertising, and wants to make it as easy as possible for you to buy ads and measure their effectiveness.

Revenue Per Customer

Revenue per customer (or lifetime value) is important for all types of e-commerce businesses, regardless of whether you're focused on new customer acquisition or loyalty (or both). Even if your business doesn't engender loyalty (because you're selling something that's infrequently purchased), you want to maximize revenue per customer; you do so by increasing shopping cart size and conversion while reducing abandonment. Revenue per customer is really an aggregate metric of other key numbers, and represents a good, single measure of your e-commerce business's health.

WineExpress Increases Revenue by 41% Per Visitor

WineExpress.com is the exclusive wine shop partner of the Wine Enthusiast catalog and website, which have been providing quality wine accessories and storage for over 30 years. The company actively A/B tests and runs different experiments to improve sales conversions.

It decided to tackle one of the most highly trafficked pages on its site—the “Wine of the Day” page—which features a single wine option that ships for just 99 cents. The company drives traffic to the page through an opt-in email list and site navigation. The page’s central focus, aside from the featured product, is a virtual wine-tasting video with the company’s highly regarded wine director.

The “Wine of the Day” page already converted well, but WineExpress.com felt there was an opportunity to improve it. However, the team was well aware of the challenge which is faced by all e-commerce sites: striking a balance between optimizing sales transactions and optimizing overall revenues. Focusing too much on sales conversions may negatively impact the bottom line if the average order size drops in the process.

WineExpress.com engaged conversion optimization agency WiderFunnel Marketing to develop and execute a strategy for the “Wine of the Day” page. WiderFunnel developed and tested three design variations, aiming mostly at testing different layout approaches. Figure 8-2 shows the original layout.

In the end, one of the variations was a clear winner, leading to a 41% increase in revenue per visitor. “Conversion also went up,” says Chris Goward, CEO of WiderFunnel, “but the key here is that revenue per visitor went up substantially. A lot of e-commerce vendors focus too much on conversion. For WineExpress.com the success is that people bought substantially more product.”

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A Classic Blend of Value & Service

Shipping is just **\$1.95 per bottle** and our select Wine of the Day **ALWAYS** ships for **99¢ per bottle!**

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Wine of the Day

Wine of the Day is your daily selection of delicious WineExpress.com wines that ship for just 99¢, for 24 hours only.

Villa Antinori 2005 Toscana IGT - Read the Description

Item Number: 29 30 191 05
Our Price: **\$21.95**
Discounted Case Price: **\$237.00 - 10% Off!**
(\$19.75 per bottle)
Availability: **IN STOCK**
Ship to State: California Why?
Buy: 1 bottle(s)
ADD TO CART

Like
Be the first of your friends to like this.

CUSTOMER RATING
Based on the averaged scale of 1 to 5 glasses
Write a Review Read 1 Review
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Video Tasting: Virtually Taste Before You Buy

Villa Antinori 2005 Toscana IGT
Antinori is a world famous producer of Tuscan wines, their history going back literally centuries. The Villa Antinori is the estate where the Chianti Classico wines have been produced for many years. This wine is a natural progression from their Chianti Classico. As the Antinoris recognized how non-native grapes like Cabernet Sauvignon, Merlot and Syrah raised the level of quality of their wine they started blending more and more and finally could no longer use the DOC designation and so it became a Super Tuscan IGT. But the quality they've reached is exceptional, especially as they've experimented more with aging in small oak barrels. This 2005 is a blend of 60% Sangiovese, 30% Cabernet Sauvignon, 15% Merlot and 5% Syrah aged for 12 months in French, American and Hungarian oak barrels. Aged in the bottle for another 8 months before release this Tuscan beauty has reached a state

You May Also Like:

Monte Antico 2006 Toscana IGT
Reg Price: **\$43.95**
Sale Price: **\$12.95**

Terra Nobile
Reg Price: **\$43.95**
Sale Price: **\$12.95**

Chateau du Pape
Reg Price: **\$43.95**
Sale Price: **\$12.95**

Chateau Petit Val
Reg Price: **\$43.95**
Sale Price: **\$12.95**

Brunello di Montalcino
Reg Price: **\$43.95**
Sale Price: **\$12.95**

Figure 8-2. The original WineExpress “Wine of the Day” page

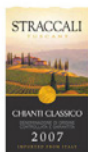
The winning layout and design is shown in Figure 8-3.

80

PART TWO: FINDING THE RIGHT METRIC FOR RIGHT NOW

Wine of the Day

Your daily selection of delicious WinExpress.com wines that ship for just 99 cents, for 24 hours only.



Chianti Classico DOCG 2007 Straccali

Item Number: 29 30 199 07

CUSTOMER RATING Based on a scale of 1 to 5 glasses

★★★★★ [Read 1 Review](#)

Chianti Classico is not the same as mere Chianti. "Classico" means that the grapes were grown in the oldest delimited zone in the region, and the production code is quite strict. Only vineyards situated on hillsides above 700 meters with advantageous orientation may be included. Vine density is spelled out as are maximum yields, and for DOCG even the maximum amount of wine per ton of grapes is set by law. Chianti Classico is no ordinary wine and this is no ordinary Chianti Classico. Straccali sourced their grapes from some of the best vineyards in the zone. Vineyards up to 1,800 feet above sea level, where the cool temperatures combine with the direct sunlight to bring out all of the complexity and nuance that Sangiovese can deliver. 90% Sangiovese blended with 10% Canaiolo and Merlot aged in oak casks and then in bottle; this wine offers ripe cherry, anise, tobacco and cedar notes in a supple easy-to-enjoy style. Best of all it's a tremendous value.

Our Price: **\$14.95**
Discounted Case Price: **\$152.40** - 15% Off! (\$12.70 per bottle)
Availability: **IN STOCK**
Ship to State: **Select One** Why?
Buy: **1** Bottle(s)
[ADD TO CART](#)

EXPERT RATING

Based on the 100 Point Scale

WE: 91

WS: 91

WA: 92

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Displaying Review 1 of 1

★★★★★ **Kicked our dinner up a notch!**

By NapaNut a **Wine Enthusiast** from On the Hudson on 6/8/2010

Gift: No

Pairs Well With: Beef

Pros: Balanced, Earthy

Best Uses: Entertaining

Describe Yourself: Aspiring Enthusiast

Bottom Line: Yes, I would recommend this to a friend

This was the highlight of our dinner party! With notes of spice and forest floor the Sangiovese grape really showed! The integration and flavor profile in the oak really made the wine hold up after being opened for several hours (it was our 3rd bottle). Enjoy now or hold on to for a couple of years as it'd be curious to see how this wine shows after some time in my Eurocave.

Was this review helpful to you? Yes / No - You may also [flag this review](#).

Displaying Review 1 of 1

You May Also Like



Chianti Classico 2007
Pappoli, Antinori
Our Price: **\$28.95**



Chianti DOCG 2008
Coraggio
Our Price: **\$9.95**



Francis Ford Coppola
Director's 2007
Cabernet Sauvignon
Our Price: **\$19.95**



Chateau Michel de
Montaigne 2008
Bergerac
Our Price: **\$10.95**



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Figure 8-3. How would 41% more revenue per visitor change your business?

“We found that placing the video above the fold was a key element in the success of the new page,” says Chris. “The eyeflow of the new layout also improved clarity, with fewer distracting elements that could draw you away from purchasing.”

Summary

- WineExpress.com used A/B testing to find a better-converting page.
- While conversion went up, the real gain was a 41% increase in revenue per visitor.

Analytics Lessons Learned

Page optimization is important. But be sure you're optimizing the right metric. You don't just want a high conversion rate—though that's good. You want high *revenue per visitor*, or *high customer lifetime value* (CLV), because that's what's really driving your business model.

Keywords and Search Terms

Most people find products by searching for them, whether that's in a web browser, on a search engine, or within a site. In each case, you want to know which keywords drive traffic that turns into money.

For paid search, you're going to be bidding against others for popular keywords in search engines like Google. Understanding which words are a comparatively good “value”—not too expensive, but still able to drive a reasonable amount of traffic—is what search engine marketing professionals do for a living.

For unpaid search, you'll be more focused on good, compelling content that improves your ranking with search engines, and on writing copy that includes the desirable search terms your paying customers tend to use (so you'll be featured in search results because of your relevance).

You also want to analyze search *within* your site. First, you want to be sure you have what people are after. If users are searching for something and not finding it—or searching, then pressing the back button—that's a sign that you don't have what they want. Second, if a significant chunk of searches fall into a particular category, that's a sign that you might want to alter your positioning, or add that category to the home page, to see if you can capture more of that market faster. Jason Billingsley, former VP of Innovation at Elastic Path, an enterprise e-commerce platform vendor, says, “Numbers vary by vertical and by site, but on-site search tools typically account for 5–15% of navigation.”

We're not going to get into the details of search engine optimization and search engine marketing here—those are worlds unto themselves. For now, realize that search is a significant part of any e-commerce operation, and

the old model of formal navigational steps toward a particular page is outdated (even though it remains in many analytics tools).

Recommendation Acceptance Rate

Big e-commerce companies use recommendation engines to suggest additional items to visitors. Today, these engines are becoming more widespread thanks to third-party recommendation services that work with smaller retailers. Even bloggers have this kind of algorithm, suggesting other articles similar to the one the visitor is currently reading.

There are many different approaches to recommendations. Some use what the buyer has purchased in the past; others try to predict purchases from visitor attributes like geography, referral, or what the visitor has clicked so far. Predictive analysis of visitors relies heavily on machine learning, and the metrics you'll track will vary from tool to tool, but they all boil down to one thing: *how much additional revenue am I generating through recommendations?*

When you make adjustments to the recommendation engine, you'll want to see if you moved the needle in the right direction.

Virality

For many e-commerce sites, virality is important, because referral and viral attention drives cheap, high-value traffic. It has the lowest cost of customer acquisition and the highest implied recommendation from someone the recipient trusts.

Mailing List Click-Through Rates

Email might not seem particularly sexy in a mobile, always-on world. But consider this: if you have the permission to reach out to your customers—and they do what you tell them to—you can keep them engaged far more effectively. Fred Wilson, partner at venture capital firm Union Square Ventures, calls email a secret weapon.*

Just a few years ago, many analysts and investors were wondering whether social media was going to lead to the end of email. In an ironic twist of fate, it turns out that social media adoption is driven by email. More and more social applications are leveraging the power of email to drive repeat usage and retention.

* http://www.avc.com/a_vc/2011/05/social-medias-secret-weapon-email.html

Every email you send can be blocked in many ways before a user does something you want, as shown in Figure 8-4.

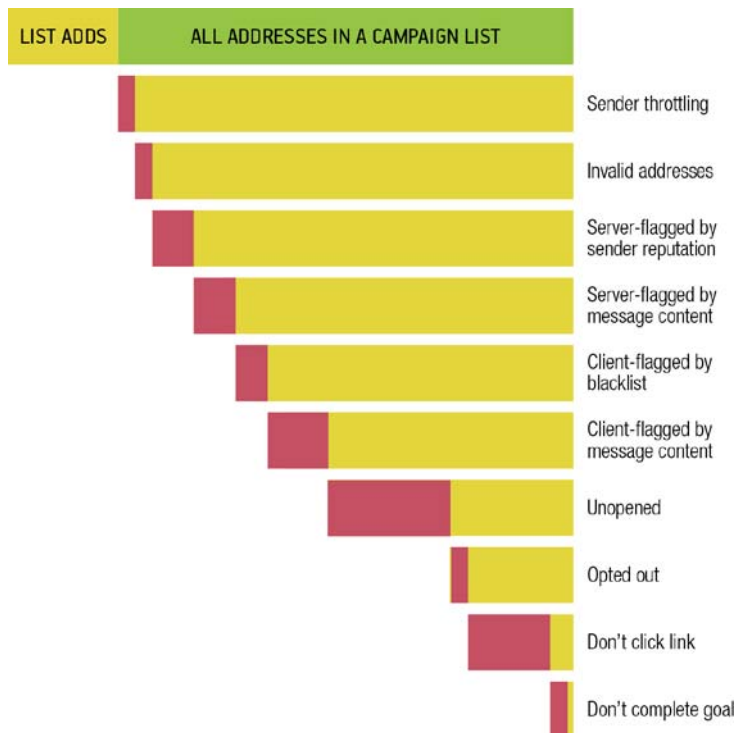


Figure 8-4. Every email runs this gauntlet; is it any wonder your click-throughs are low?

Even those who respond to the call to action within a message might not do something useful once they get to your website. In some cases, the unsubscribe rate caused by a bad email can overshadow any profit from the campaign, so email is a tool to use carefully.

You calculate the email click-through rate by dividing the number of visits you get from a campaign by the number of messages you've sent. A more sophisticated analysis of email click-through rate will include a breakdown of the various places where things can go wrong—for example, what percentage of email addresses didn't work anymore—and a look at the eventual outcome you're after (such as a purchase).

You also need to create a campaign contribution metric—basically, the added revenue from the campaign, minus the cost of the campaign and the loss due to unsubscribes. The good news is that most email platforms include this data with minimal effort.

Offline and Online Combinations

All e-commerce vendors have to deliver something to buyers. That delivery may be electronic, but in most cases, it means moving physical goods around. Not only do high shipping costs reduce conversion rates, but successful, timely delivery is also a huge factor in buyer satisfaction and repeat purchases. Offline components of any e-commerce business need to be analyzed carefully.

Shipping Time

Real-time delivery and next-day shipping are increasingly common, and buyers are becoming more demanding. Shipping time is key, and it's tightly linked to how effectively the retailer handles logistics. E-commerce companies can most likely achieve significant operational efficiencies just by optimizing their fulfillment and shipping processes. These efficiencies turn into a competitive advantage, because they let you sell to consumers who are more interested in faster, better-quality service than the cheapest price.

Stock Availability

“When items are out of stock, sales go down,” says Jason Billingsley. “Of course that’s obvious, but few e-commerce vendors do anything about it.” Improving your inventory management can make a big difference to your bottom line. Jason recommends lowering out-of-stock items on product list or category pages, effectively hiding them from consumers. You can also hide these items from searches, or again, make sure they appear lower in the search results.

It’s also interesting to analyze inventory versus sales. “A lot of e-commerce vendors hold too much inventory for things that don’t sell well, and not enough for things that do sell well,” says Jason. He recommends aligning product categories based on how much they make up of sales versus inventory. If you’re not selling a lot in a product category, but that group of products makes up a high percentage of your inventory, things are out of balance.

Visualizing the E-commerce Business

Figure 8-5 represents a user’s flow through an e-commerce business, along with the key metrics at each stage.

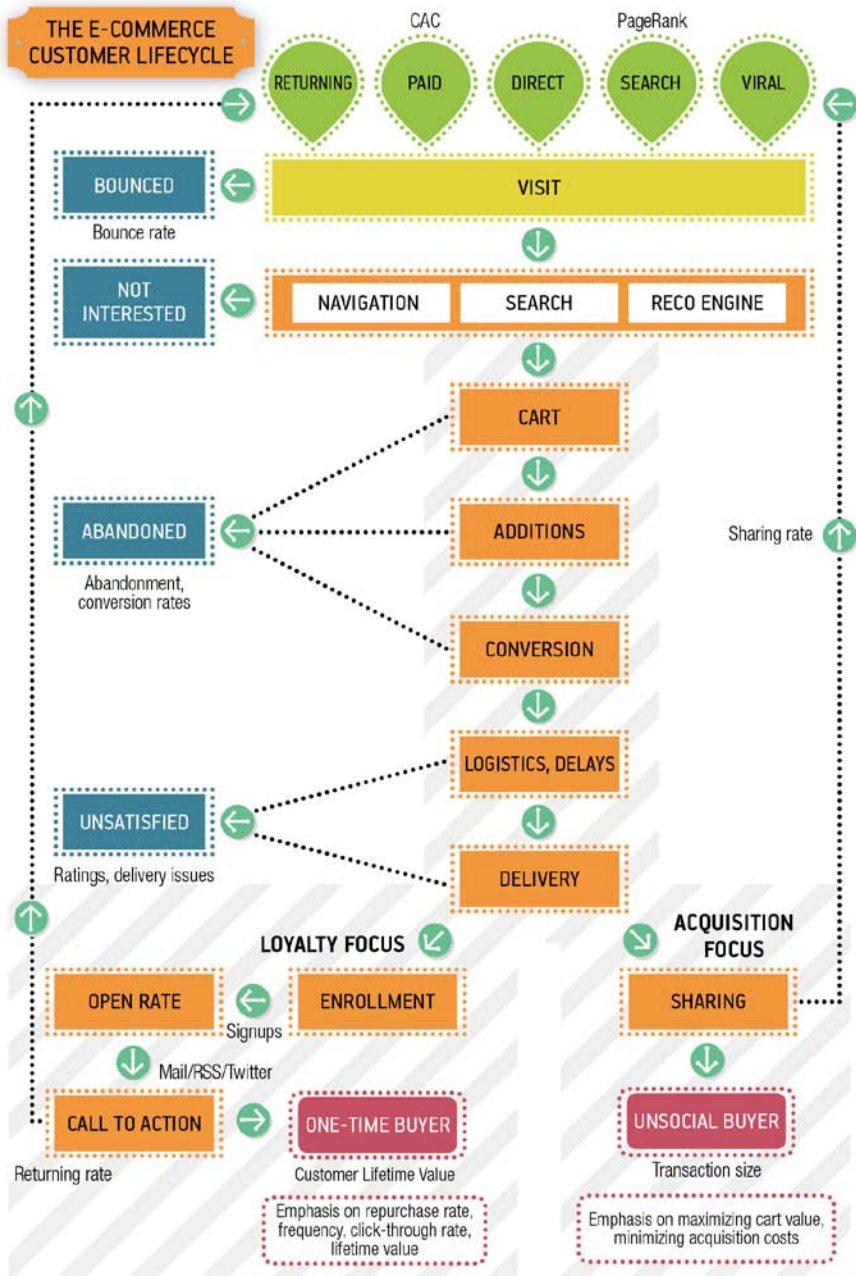


Figure 8-5. More than a typical funnel: how e-commerce businesses acquire customers

Wrinkles: Traditional E-commerce Versus Subscription E-commerce

So far, we've looked at a relatively simple e-commerce model involving a one-time purchase. Plenty of services, however, are subscription-based. This complicates things.

Subscription services bill the customer on a regular basis. Churn is easier to measure—the customer doesn't renew his account or cancels outright—but happens more dramatically. Rather than a gradual reduction in purchases over time, the customer's revenue simply stops. If this is you, check out the following business model—Software as a Service—because it applies to you as well.

Phone companies devote considerable effort to tackling this kind of churn. They build sophisticated models that predict when a subscriber is about to cancel her service, and then offer her a new phone or a discount on a renewed contract just before the cancellation happens.

Expired payment information is also a concern for subscriptions. If you try to charge a customer's credit card for his monthly renewal and the transaction fails, you have to convince him to re-enter payment details.

From an analytics perspective, this means tracking additional metrics for the rate of payment expiration, the effectiveness of renewal campaigns, and the factors that help (or hinder) renewal rates. These metrics matter later on as you're working to reduce churn, but as the total number of loyal users grows, renewal revenue represents a significant portion of total revenue.

Key Takeaways

- It's vital to know if you're focused on loyalty or acquisition. This drives your whole marketing strategy and many of the features you build.
- Searches, both off- and on-site, are an increasingly common way of finding something for purchase.
- While conversion rates, repeat purchases, and transaction sizes are important, the ultimate metric is the product of the three of them: revenue per customer.
- Don't overlook real-world considerations like shipping, warehouse logistics, and inventory.

There's another business model that's close to e-commerce: two-sided marketplaces. Both models are concerned with transactions between a buyer and a seller, and the loyalty of customers. If you want to learn more about marketplaces, head to Chapter 13. Otherwise, you can move on to Chapter 14 to understand how your current stage affects the metrics you watch.

Model Two: Software as a Service (SaaS)

A SaaS company offers software on an on-demand basis, usually delivered through a website it operates. Salesforce, Gmail, Basecamp, and Asana are all examples of popular SaaS products. If you're running a SaaS business, here's what you need to know about metrics.

Most SaaS providers generate revenue from a monthly (or yearly) subscription that users pay. Some charge on a consumption basis—for storage, for bandwidth, or for compute cycles—although this is largely confined to Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) cloud computing companies today.

Many SaaS providers offer a tiered model of their service, where the monthly fee varies depending on some dimension of the application. This might be the number of projects in a project management tool, or the number of customers in a customer relationship management application. Finding the best mix of these tiers and prices is a constant challenge, and SaaS companies invest considerable effort in finding ways to upsell a user to higher, more lucrative tiers.

Because the incremental cost of adding another customer to a SaaS service is negligible—think of how little it costs Skype to add a new user—many SaaS providers use a freemium model of customer acquisition.* Customers can start using a free version of the service that's constrained, in the hopes

* There are many ways to approach freemium, from free trials to crippled products to discount coupons, which we'll look at in more detail when we tackle revenue optimization.

that they'll consume all the free capacity and pay for more. Dropbox, for example, gives subscribers a few gigabytes of storage for free, then does everything it can—including encouraging sharing and photo uploads—to make sure users consume that capacity.

Consider a project management startup that lets users try its product, but charges for more than three concurrent projects. It offers four tiers: free, 10 projects, 100 projects, and unlimited. It runs ads on several platforms to attract users to its site, and each time a user invites someone else to join a project, that person becomes a user.

The company cares about the following key metrics:

Attention

How effectively the business attracts visitors.

Enrollment

How many visitors become free or trial users, if you're relying on one of these models to market the service.

Stickiness

How much the customers use the product.

Conversion

How many of the users become paying customers, and how many of those switch to a higher-paying tier.

Revenue per customer

How much money a customer brings in within a given time period.

Customer acquisition cost

How much it costs to get a paying user.

Virality

How likely customers are to invite others and spread the word, and how long it takes them to do so.

Upselling

What makes customers increase their spending, and how often that happens.

Uptime and reliability

How many complaints, problem escalations, or outages the company has.

Churn

How many users and customers leave in a given time period.

Lifetime value

How much customers are worth from cradle to grave.

These metrics follow a natural, logical order. Consider the customer's lifecycle: the company acquires a user through viral or paid marketing. Hopefully, that user continues to use the service, and eventually pays for a subscription. The user invites others, and perhaps upgrades to a higher tier. As a customer, she may have issues. In the end, she stops using the service—at which point, we know how much revenue she contributed to the business.

Describing a customer lifecycle in this way is a good method for understanding the key metrics that drive your business. This is where Lean Startup helps. You need to know *which aspects of your business are too risky* and then work to improve the metric that represents that risk.

Unfortunately, that's not always possible. There's no way to measure conversion rates if there are no users to convert. You can't quantify virality if no paid customers are inviting new users. And you probably can't measure stickiness for just a few people if the service requires a critical mass of users to be useful. This means you have to *know where the risk is*, but focus, in the right order, on *just enough optimization to get the business to a place where that risk can be quantified and understood*.

Let's say that the company in our example is concerned about whether the product is good enough to make people use it consistently. This is usually the right place to focus for SaaS companies, because they seldom get a second chance to make a first impression, and need users to keep coming back. In other words, they care about stickiness.

The company will, of course, need some amount of conversion (and therefore some amount of attention), but *only enough to test stickiness*. Those initial users could be acquired by word of mouth, or by direct selling, or by engaging with users on social networks. There's probably no need for a full-blown, automated marketing campaign at this stage.

Backupify's Customer Lifecycle Learning

Backupify is a leading backup provider for cloud-based data. The company was founded in 2008 by Robert May and Vik Chadha, and has gone on to raise \$19.5M in several rounds of financing.

Backupify was good at focusing on a specific metric at a specific stage, in order to grow the company. “Initially, we focused on site visitors, because we just wanted to get people to our site,” said CEO and co-founder Robert May. “Then we focused on trials, because we needed people testing out our product.”

Once Backupify had people trialing the product in sufficient numbers, Robert focused on signups (conversions from free trial to paying customer). Now, the primary focus is *monthly recurring revenue* (MRR).

The cloud storage industry has matured a lot in a handful of years, but back in 2008 it was a nascent market. At the time, the company was focused on consumers and realized that, while revenue was going up, the customer acquisition cost (CAC) was too high. “In early 2010 we were paying \$243 to acquire a customer, who only paid us \$39 per year,” explained Robert. “Those are horrible economics. Most consumer apps get around the high acquisition costs with some sort of virality, but backup isn’t viral. So we had to pivot [from consumer sales] to go after businesses.”

The pivot for Backupify was a success. The company is growing successfully. For now, it remains focused on MRR, but it also tracks how much a customer is worth in the entirety of his relationship with the company—the customer lifetime value (CLV). CLV and CAC are the two essential metrics for a subscription business.

In Backupify’s case, the ratio of CLV to CAC is 5–6x, meaning that for every dollar the company invests in finding a customer, it makes back \$5 to \$6. This is excellent, and it’s partly due to its low churn. As it turns out, lock-in is high for cloud storage, which gives the company plenty of time to make back its acquisition costs in the form of revenues. We’ll look at the CAC/CLV ratio in more detail later in the book.

“MRR growth will probably be our top metric until we hit \$10M in annual recurring revenue,” said Robert. “I watch churn, but I’m more focused on customer acquisition payback in months, which is how quickly I make my money back on each customer.” Robert’s target for that metric is 12 months or less for any given channel. Customer acquisition payback is a great example of a single number

that encompasses many things, since it rolls up marketing efficiency, customer revenue, cash flow, and churn rate.

Summary

- Before focusing on sophisticated financial metrics, start with revenue. But don't ignore costs, because profitability is the real key to growth.
- You know it's time to scale when your paid engine is humming along nicely, which happens when the CAC is a small fraction of the CLV—a sure sign you're getting a good return on your investment.
- Most SaaS businesses thrive on monthly recurring revenue—customers continue to pay month after month—which is a great foundation on which to build a business.

Analytics Lessons Learned

There's a natural progression of metrics that matter for a business that change over time as the business evolves. The metrics start by tracking questions like “Does anyone care about this at all?” and then get more sophisticated, asking questions like “Can this business actually scale?” As you start to look at more sophisticated metrics, you may realize your business model is fundamentally flawed and unsustainable. Don't just start from scratch: sometimes what you need is a new market, not a new product, and that market may be closer than you think.

Measuring Engagement

The ultimate metric for engagement is daily use. How many of your customers use your product on a daily basis? If your product isn't a daily use app, establishing a minimum baseline of engagement takes longer, and the time it takes to iterate through a cycle of learning is longer. It's also hard to demonstrate enough value, quickly enough, to keep people from churning. Habits are hard to form—and with any new product, you're creating new habits, which you want to do as quickly and intensely as possible.

Evernote is an example of a daily use application (at least, its creators would like you to use it on a daily basis!). The people who pay for Evernote are most likely those who use it daily. Evernote has reported that only 1% of users convert into paid customers,* but for CEO Phil Libin that's OK—after all, the company has over 40 million users, and this year it's focused

* <http://econsultancy.com/ca/blog/10599-10-tips-for-b2b-freemiums>

further on engagement, which is why it's acquiring companies like Skitch and adding image upload features.

After years of operation, the company has also learned that users take months or even years to become paying customers. Investors likely agree with the company's focus on engagement, since they're giving the company deep cash reserves to keep growing. In other words, conversion isn't Evernote's main concern right now, although once it improves engagement that's absolutely what it will concentrate on.*

Consider two other applications we use heavily but don't consider daily use applications: Expensify for expense reporting, and Balsamiq for wireframing. Just because *we* don't use them every day doesn't mean that a travelling sales rep, or a UI designer, isn't a daily user.

That's an important lesson around business models and Lean Startup—you bring an early version of your product to the market, test its usage, and look for where it's got the highest engagement among your customers. If there's a subsection of users who are hooked on your product—your early adopters—figure out what's common to them, refocus on their needs, and grow from there. Claim your beachhead. It will allow you to iterate much more quickly on a highly engaged segment of the market.

Some applications—such as a wedding gift registry, a reservation tool for a visit to the dentist, or a tax preparation site—simply aren't meant to be used on a daily basis. But you still need to set a high bar for engagement and measure against it. It's critical that you understand customers' behavior, and draw lines in the sand appropriate to that. Perhaps the goal is weekly or monthly use.

If you're building something genuinely disruptive, you need to consider the technology adoption lifecycle, from early to mainstream. Hybrid cars, Linux servers, home stereos, and microwaves were first adopted by a small segment of their markets, but took years of evangelism and millions of marketing dollars to be considered conventional.

In the first stages of your company, you typically have a small, devoted, unreasonably passionate following. This happens because new products initially appeal only to early adopters comfortable with change, or to that segment of the market so desperate for your solution that it's willing to tolerate something that's still rough around the edges. Those early adopters will be vocal, but beware. Their needs might not reflect those of the bigger, more lucrative mainstream. Google Wave attracted a flurry of early attention, but failed to achieve mainstream interest despite its powerful, flexible feature set.

* <http://gigaom.com/2012/08/27/evernote-ceo-phil-libin/>

You hope your first users are reflective of the mainstream, so you can reach a bigger market—something Geoffrey Moore famously referred to as “crossing the chasm.” This isn’t always the case. You also won’t have the same volume of metrics on which to base your decisions.

When measuring engagement, don’t just look at a coarse metric like visit frequency. Look for usage patterns throughout your application. For example, it’s interesting to know that people log in three times per week, but what are they actually doing inside your application? What if they’re only spending a few minutes each time? Is that good or bad? Are there specific features they’re using versus others? Is there one feature that they always use, and are there others they never touch? Did they return of their own accord, or in response to an email?

Finding these engagement patterns means analyzing data in two ways:

- To find ways you might improve things, segment users who do what you want from those who don’t, and identify ways in which they’re different. Do the engaged users all live in the same city? Do all users who eventually become loyal contributors learn about you from one social network? Are the users who successfully invite friends all under 30 years old? If you find a concentration of desirable behavior in one segment, you can then target it.
- To decide whether a change worked, test the change on a subset of your users and compare that subset’s results to others. If you put in a new reporting feature, reveal it to half of your users, and see if more of them stick around for several months. If you can’t test features in this way without fallout—the customers who *didn’t* get the new feature might get angry—then at the very least, compare the cohort of users who joined after the feature was added to those who came before.

A data-driven approach to measuring engagement should show you not only *how sticky* your product or service is, but also *who stuck and whether your efforts are paying off*.

Churn

Churn is the percentage of people who abandon your service over time. This can be measured weekly, monthly, quarterly, etc., but you should pick a timespan for all your metrics and stick to it in order to make comparing them easier. In a freemium or free-trial business model, you have both users (not paid) and customers (paid), and you should track churn for both groups separately. While churn might seem like a simple metric, there are a number of complications that can make it misleading, particularly for companies that have a highly variable growth rate.

Unpaid users “churn” by cancelling their accounts or simply not coming back; paid users churn by cancelling their accounts, stopping their payments, or reverting to an unpaid version. We recommend defining an inactive user as someone who hasn’t logged in within 90 days (or less). At that point, they’ve churned out; in an always-connected world, 90 days is an eternity.

Remember, however, that you may still be able to invite them back to the service later if you have significant feature upgrades—as Path did when it redesigned its application—or if you’ve found a way to reach them with daily content, as Memolane did when it sent users memories from past years.

As Shopify data scientist Steven H. Noble* explains in a detailed blog post,† the simple formula for churn is:

$$\frac{\text{(Number of churns during period)}}{\text{(# customers at beginning of period)}}$$

Table 9-1 shows a simple example of a freemium SaaS company’s churn calculations.

	Jan	Feb	Mar	Apr	May	Jun
Users						
Starting with	50,000	53,000	56,300	59,930	63,923	68,315
Newly acquired	3,000	3,600	4,320	5,184	6,221	7,465
Total	53,000	56,600	60,920	66,104	72,325	79,790
Active users						
Starting with	14,151	15,000	15,900	16,980	18,276	19,831
Newly active	849	900	1080	1,296	1,555	1,866
Total	15,000	15,900	16,980	18,276	19,831	21,697
Paying users						
Starting with	1,000	1,035	1,035	1049	1,079	1,128
Newly acquired	60	72	86	104	124	149
Lost	(25)	(26)	(27)	(29)	(30)	(33)
Total	1,035	1,081	1,140	1,216	1,310	1,426

Table 9-1. Example of churn calculations

* <http://blog.noblemail.ca/>

† <http://www.shopify.com/technology/4018382-defining-churn-rate-no-really-this-actually-requires-an-entire-blog-post>

Table 9-1 shows users, active users, and paying users. Active users are those who have logged in at least once in the month after signing up. New users are growing at 20% a month, 30% use the service at least once (in the month after signing up), and 2% convert into paid customers.

Here's the churn calculation for February:

$$\frac{26 \text{ users lost during the period}}{1035 \text{ paying users at the start of the period}} \times 100$$

If 2.5% of customers churn every month, it means that the average customer stays around for 40 months (100/2.5). This is how you can start to calculate the lifetime value of a customer (40 months × average monthly revenue per user).

Churn Complications

Noble explains that because the number of churns in a particular period is affected by the entire period, but the number of customers at the beginning of a period is a moment-in-time snapshot, calculating churn in this simple manner can give misleading results in startups where growth is varied or unusually fast. In other words, churn isn't normalized for behavior and size—you can get different churn rates for the same kind of user behavior if you're not careful.

To fix this, you need to calculate churn in a less simple, but more accurate, way: average out the number of customers in the period you're analyzing, so you're not just looking at how many you had at the beginning:

$$\frac{(\text{Number of churns during period})}{[(\# \text{ customers at beginning of period}) + (\# \text{ customers at end of period})] / 2}$$

This spreads out the total number of customers across the period, which is better, but it still presents a problem if things are growing quickly. If you have 100 customers at the start of the month, and 10,000 at the end, this formula assumes you have 5,050 customers in the middle of the month—which you don't, if you're on a hockey stick. Most of your new customers come in the later part of the month, so an average won't work. What's more, most of your churns will, too.

Worse: if you're counting churns as "someone who hasn't come back in 30 days," then you're comparing last month's losses to this month's gains, which is even more dangerous, because you're looking at a lagging indicator (last month's bad news). So by the time you find out something is wrong, it'll be next month.

Ultimately, the math gets really complex. There are two ways to simplify it. The first is to measure churn *by cohort*, so you're comparing new to

churned users based on when they first became users. The second way is really, really simple, which is why we like it: measure churn each day. The shorter the time period you measure, the less that changes during that specific period will distort things.

Visualizing the SaaS Business

Figure 9-1 represents a user's flow through a SaaS business, along with the key metrics at each stage.

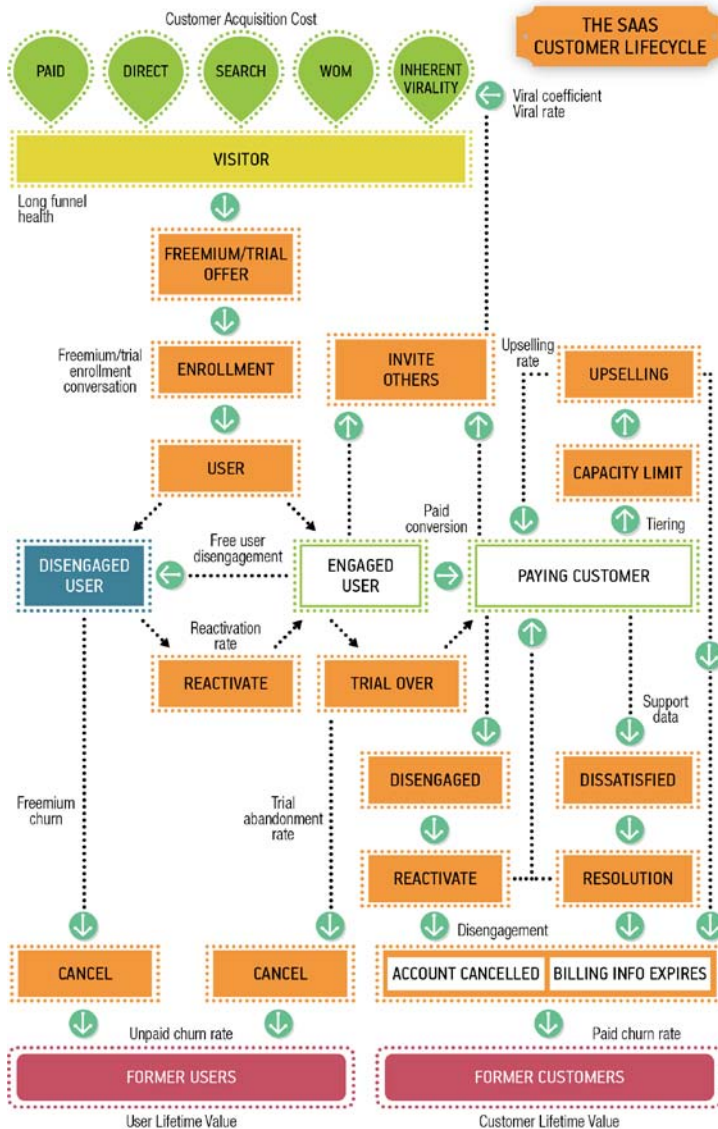


Figure 9-1. Visitors, users, customers: the life of a SaaS company

ClearFit Abandons Monthly Subscriptions for 10x Growth

ClearFit is a SaaS provider of recruitment software aimed at helping small businesses find job candidates and predict their success. When they started, founders Ben Baldwin and Jamie Schneiderman offered a \$99/month (per job posting) package. “We kept hearing over and over that monthly subscriptions were the key to growing a successful SaaS business,” says Ben. “So that’s the direction we took, but it didn’t work as planned.”

Two things confused ClearFit’s customers: the price point and the monthly subscription. Ben and Jamie wanted to price ClearFit below what customers paid for job boards (typically more than \$300 per job posting), but customers were so used to that price point that they were skeptical of ClearFit’s value at \$99/month. Ben says, “We don’t compete with job boards, we partner with them, but at the time it seemed reasonable to have a lower price point to garner attention.” Customers didn’t understand why they would pay a subscription fee for something that they would most likely use sporadically. “When a company needs to hire, they want to do it fast and they’re willing to invest at that moment in time,” says Ben. “Our customers are too small to have dedicated HR staff or recruiters that are constantly looking for talent, and their hiring needs go up and down frequently.”

Ben and Jamie decided to abandon their low monthly subscription and switch to a model that their customers understood: a per-job fee. ClearFit launched its new price point at \$350 for a single job (for 30 days) and almost immediately saw three times the sales. The increase in volume and the higher price point improved revenue tenfold. “When we increased the price,” Ben says, “it was an important signal to our customers. They understood the model and could more easily compare the value against other solutions they use. Even though what we do is different than a job board, we wanted our customers to feel comfortable with purchasing from us, and we wanted to fit into how they budget for recruiting.”

In ClearFit’s case, innovating on the business model didn’t make sense. Ben says, “People don’t do subscriptions for haircuts, hamburgers, and hiring. You have to understand your customer, who they are, how and why they buy, and how they value your product or service.”

ClearFit’s switch to a per-job-posting model may go against the popular grain of subscription-based SaaS businesses, but the company continues to see great success with 30% month-over-month revenue growth.

Summary

- ClearFit initially focused on a subscription model for revenue, but customers misinterpreted its low pricing as a sign of a weak offering.
- The company switched to a paid listing model, and tripled sales while improving revenue tenfold.
- The problem wasn't the business model—it was the pricing and the messages it sent to prospects.

Analytics Lessons Learned

Just because SaaS is a recurring service doesn't mean it needs to be priced that way. If your product is ephemeral—like a transient job posting—it might be better to offer more transactional pricing. Pricing is a tricky beast. You need to test different price points qualitatively (by getting feedback from customers) and quantitatively. Don't assume a low price is the answer; customers might not attribute enough value to your offering. And remember that everything, including price, makes up the “product” you're offering.

Wrinkles: Freemium, Tiers, and Other Pricing Models

In a SaaS model, most of the complexity comes from two things: the promotional approach you choose, and pricing tiers.

As we've seen, some SaaS companies use a freemium model to convince people to use the service, and then make money when those users exceed some kind of cap. A second approach is a free trial, which converts to a paid subscription if the customer doesn't explicitly cancel after a certain time. A third approach is paid-only. There are others. Each has its benefits and drawbacks—paid-only controls cost, is more predictable, and gives you an immediate idea of whether your offering is valuable; freemium allows you to learn how people are using your service and builds goodwill. The difference between these user groups can complicate analysis.

The second wrinkle comes from how you tier pricing. Since different customers have different levels of consumption, the price they pay may change over time. This means you're constantly trying to upsell users to bigger tiers, and predicting growth adds to the dimensions of a model, making it harder to predict and explain your business.

For the most part, we've talked about SaaS as a service provided to customers on a monthly subscription. But there are other revenue models that can work as well. While a subscription model lends itself to more predictive financial planning and less volatile revenue numbers, it doesn't always fit the value proposition, or how customers expect to pay.

Key Takeaways

- While freemium gets a lot of visibility, it's actually a sales tactic, and one you need to use carefully.
- In SaaS, churn is everything. If you can build a group of loyal users faster than they erode, you'll thrive.
- You need to measure user engagement long before the users become customers, and measure customer activity long before they vanish, to stay ahead of the game.
- Many people equate SaaS models with subscription, but you can monetize on-demand software in many other ways, sometimes to great effect.

SaaS businesses share much with mobile applications. Both business models care about customer churn, recurring revenue, and creating enough user engagement to convince users to pay for the product. You can read Chapter 10 to learn more, or you can skip to Chapter 14 to understand how your current stage affects the metrics you should watch.

Model Three: Free Mobile App

A third business model that's increasingly common is the mobile app. If you're selling a mobile application for money, you have a fairly straightforward sales funnel—you promote the application, and people pay you for it. But when you derive your revenue from other sources, such as in-game content, paying for features, or advertising, the model gets more complex. If, after looking at the business model flipbook in Chapter 7, you've decided you're running a mobile app business, then this is what analytics look like for you.

The mobile application has emerged as a startup business model with the rise of iPhone and Android smartphone ecosystems. Apple's application model is tightly regimented, with the company controlling what's allowed and reviewing submissions. Applications for the Android platform may be downloaded from the Android store or "side-loaded" from sources that aren't tightly controlled.

For Lean startups, an app store model* presents a challenge. Unlike web applications, where it's easy to do A/B testing and continuous deployment, mobile apps go through the app store gatekeeper—which limits the number of iterations a company can undergo, and hampers experimentation. Modern mobile apps are getting around the gatekeepers to some degree

* To be clear: Apple has an App Store, and may have claim to the name. But there are plenty of stores from which users can purchase an application for a platform like Android or Kindle. Even the Wii and Salesforce's App Exchange share the dynamics we're talking about here. So when we refer to "an app store," we mean any marketplace for new products created by the maker of a platform. When we're referring to Apple's, we'll capitalize it.

by feeding in online content without requiring an actual app upgrade, but this takes extra work to set up. Some developers advocate trying out the Android platform first because it's easier to push frequent updates to users. Once those developers have validated their MVP on Android, they move to Apple's more constrained deployment environment. Others choose a smaller, secondary market (like the Canadian App Store) and work the bugs out there first.

Mobile app developers make money within their applications in several ways:

Downloadable content (such as new maps or vehicles)

Tower Madness, a popular Tower Defense game for the iPhone, sells additional map sets at a small cost.

Flair and customization of in-character appearance and gaming content (a pet, clothing for a player's avatar)

Blizzard sells non-combat enhancements like pets or vanity mounts.

Advantages (better weapons, upgrades, etc.)

Draw Something charges for colors that make drawing easier.

Saving time

A respawn rather than having to run a long distance, a strategy employed by many casual web-based MMOs.

Elimination of countdown timers

Topping up energy levels that would normally take a day to refresh, which *Please Stay Calm* uses.

Upselling to a paid version

Some applications constrain features. As of this writing, Evernote's mobile application doesn't allow offline synchronization of files unless a user has upgraded to the paid client, for example.

In-game ads

Some games include in-game advertising, where the player watches promotional content in return for credits in the in-game currency.

Consider a mobile game that makes money from in-game purchases and advertising. Users find the application in an app store, either by searching or because it's showcased due to popularity or as part of a list. They consider the application—consulting ratings, number of downloads, other titles, and written reviews—and ultimately download the application. Then they launch it and start playing.

The game has an in-game economy (gold coins) that can be used to buy weapons or health more quickly than by simply playing the game. There's also a way to watch ads that pays gold coins. The company spends considerable time striking a balance between making it enjoyable for casual players (who don't want to pay) while still making a purchase attractive (so players pay a small amount). This is where the science of economics meets the psychology of game design.

The company cares about the following key metrics:

Downloads

How many people have downloaded the application, as well as related metrics such as app store placement, and ratings.

Customer acquisition cost (CAC)

How much it costs to get a user and to get a paying customer.

Launch rate

The percentage of people who download the app, actually launch it, and create an account.

Percent of active users/players

The percentage of users who've launched the application and use it on a daily and monthly basis: these are your daily active users (DAU) and monthly active users (MAU).

Percentage of users who pay

How many of your users ever pay for anything.

Time to first purchase

How long it takes after activation for a user to make a purchase.

Monthly average revenue per user (ARPU)

This is taken from both purchases and watched ads. Typically, this also includes application-specific information—such as which screens or items encourage the most purchases. Also look at your ARPPU, which is the average revenue per *paying* user.

Ratings click-through

The percentage of users who put a rating or a review in an app store.

Virality

On average, how many other users a user invites.

Churn

How many customers have uninstalled the application, or haven't launched it in a certain time period.

Customer lifetime value

How much a user is worth from cradle to grave.

We've seen several of these metrics in the previous section on the SaaS business model, but there are some that differ significantly in a mobile app world.

Installation Volume

According to mobile analytics consultancy and developer Distimo, getting featured in an app store has a huge impact on app sales.* An app that's already in the top 100 and then gets featured will jump up an average of 42 places on the Android market, 27 places on the iPad App Store, and 15 places on the iPhone App Store.

For mobile developers, the dynamics of an app store matter more than almost anything else when it comes to achieving significant traction. Being showcased on the home page of Apple's App Store routinely yields a hundredfold increase in traffic.† Analytics firm Flurry estimates that in 2012, the top 25 applications in the iPhone App Store accounted for roughly 15% of all revenue, and the rest of the top 100 accounted for roughly 17%. Lenny Rachitsky, founder of Localmind, a social mobile location app that was part of Year One Labs, said, "Getting featured is the single biggest thing that ever happened to us. It even matters what slot you're featured in on the App Store, which affects whether you appear above the fold or not."

Alexandre Pelletier-Normand, co-founder of Execution Labs, a game development accelerator, says that getting featured on Google Play is even more beneficial for revenue than being featured in Apple's App Store. "Getting featured on Google Play boosts your ranking, and the rankings in Google Play are quite static compared to the App Store. That means you'll rank higher for longer, which in turn means more revenue."

While this unfair advantage is gradually changing—revenues for less popular applications are growing overall—the facts are simple: if you want to make money, you need to be ranked highly in app stores, and getting featured helps a great deal.

* <http://www.distimo.com/wp-content/uploads/2012/01/Distimo-Publication-January-2012.pdf>

† <http://blog.flurry.com/bid/88014/The-Great-Distribution-of-Wealth-Across-iOS-and-Android-Apps>

Average Revenue Per User

Mobile app developers are constantly finding ingenious ways to monetize their applications. These developers focus on the average revenue per user (ARPU) on a monthly or lifetime basis. Many game developers instrument their applications heavily themselves, since there isn't a dominant, open way to collect data from applications easily.

If you're making a game, you don't just care about revenue. You're walking a fine line between the compelling content and addictive gameplay that makes things fun and the in-game purchases that bring in money. Avoiding the "money grab" that turns players off is hard: you need to keep users coming back and inviting their friends while still extracting a pound of flesh each month (or at least a few dollars!). As a result, in addition to ARPU, some metrics relate to playability (ensuring the game is neither too hard nor too easy, and that players don't get stuck) and player engagement.

ARPU is simply the revenue you've made, divided by the number of active users or players you have. If you inflate the number of active players to make yourself look good, you'll reduce the ARPU, so this metric forces you to draw a realistic line in the sand about what "engaged" means. Typically, ARPU is calculated on a monthly period.

For mobile games, you can measure customer lifetime value (CLV) by calculating the averages of the money spent by every player post-churn. But because it will (hopefully!) take months or years for a player to leave you, it's easier to estimate the CLV in the way we did for a SaaS company.

Let's return to our example of a free mobile game that makes money from in-game purchases and ads. This month, it's had just over 12,300 downloads, and 96% of those people launch the app and connect to the company's servers. Of these, 30% become "engaged" players that use the application on three separate days.

Each engaged player generates, on average, \$3.20 a month in revenue, from a mix of in-game purchases and advertising. This means that the current month's downloads will generate about \$11,339 in revenue (though it may take time for the company to receive that revenue because of the app store's payment model).

Of the total players, 15% churn every month, which means the average player lifetime is 6.67 months ($1/0.15$). This in turn means that the company's monthly revenue is around \$75,500. The player lifetime value is the ARPU multiplied by the player lifetime—in this case, \$21.33. If the company knows the cost of acquiring an engaged player, it can also calculate the amount each player contributes to the bottom line, the return on investment in advertising efforts, and how long it takes to recover the

investment made in acquiring an engaged user. Figure 10-1 shows how all these calculations are performed.

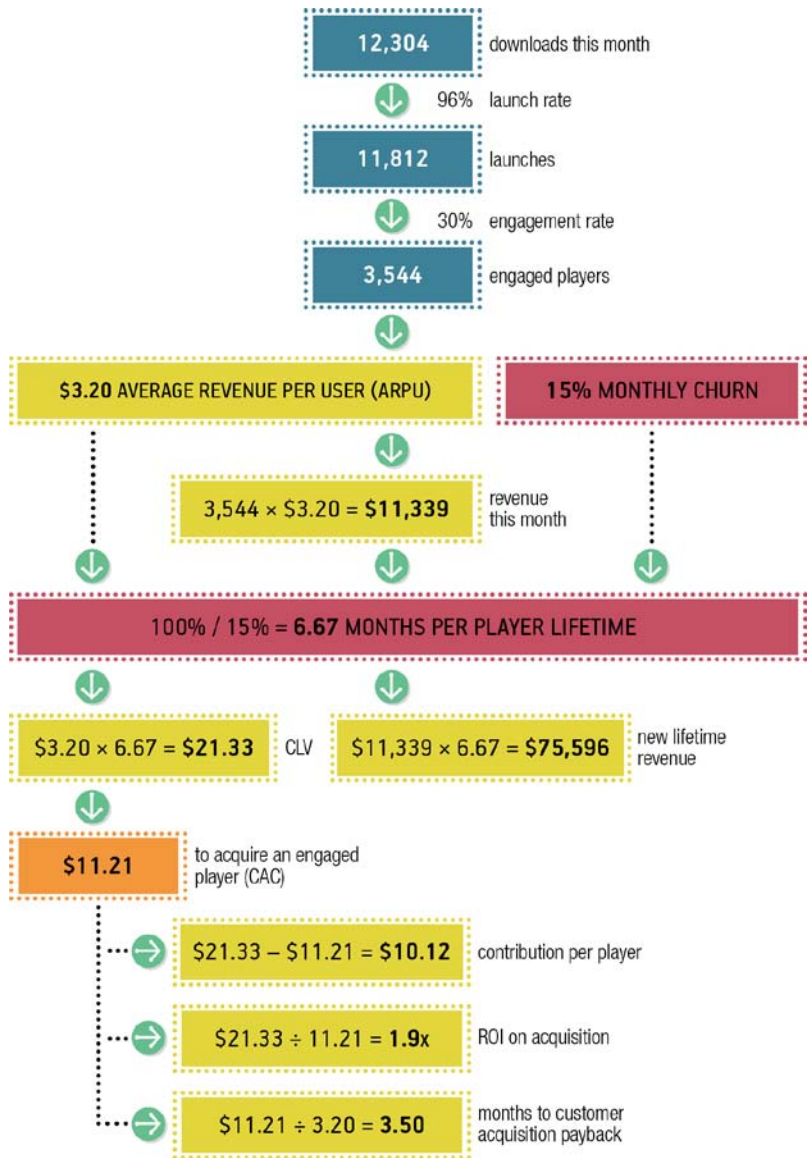


Figure 10-1. How to calculate all the essential metrics for a mobile app

The business model for the company hinges on these numbers. The company needs to increase download volumes, increase the engagement rate, maximize ARPU, minimize churn, and improve virality so customer acquisition costs go down. There’s a natural tension between these goals—

for example, making the game more enjoyable so people don't churn versus extracting money so ARPU is high—and this is where the art and finesse of game design comes in.

Percentage of Users Who Pay

There are some players who simply won't spend money in a game. And there are others (often referred to as “whales”) who will spend literally *thousands* of dollars to gain the upper hand in a game they love. Knowing the difference between the two—and finding ways to make more users purchase things within the application—is the key to a successfully monetized free mobile application.

The most basic metric here is the percentage of users who pay something. Beyond this basic metric, you want to do segmentation and cohort analysis. If, for example, you know that a particular ad campaign brought in users who were more likely to make in-game purchases, you should be running more campaigns like that. You also need to be sophisticated in terms of what you market to users in-game: whales are more likely to make bigger in-app purchases, whereas users who haven't bought anything yet should be offered something inexpensive to start.

Measuring your ARPU gives you a good idea of how much paying users are spending. Convincing an already-paying user to pay more may not have a significant impact on your ARPU because most users won't pay, but it could absolutely move the needle on revenue in a significant way. Treat your *paying* users as a separate customer base and track their behavior, churn, and revenue separately from your nonpaying ones.

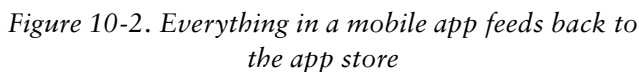
Churn

We've looked at churn in detail in Chapter 9. It's also a critical metric for mobile applications. Keith Katz, co-founder of Execution Labs, a game development accelerator, and former Vice President of Monetization for OpenFeint, recommends looking at churn in specific time periods:

Track churn at 1 day, 1 week, and 1 month, because users leave at different times for different reasons. After one day it could be you have a lousy tutorial or just aren't hooking users. After a week it could be that your game isn't “deep enough,” and after a month it could be poor update planning.

Knowing when users churn gives you an indication of why they're churning and what you can try in order to keep them longer.

Figure 10-2 represents a user's flow through a mobile app business, along with the key metrics at each stage.



German game developer Wooga is a master of metrics. The company is building a formula for successful social games that's completely driven by numbers. The company has over 32 million active monthly users from 231 countries, and over 7 million daily users. In a 2012 *Wired* article, founder Jens Begemann shared his company's approach.*

Wooga iterates constantly and releases updates on a weekly basis. It picks a key metric to focus on for an update—retention, for example—and identifies a number of tactics to try to improve it. When the update is released, it measures the changes rigorously and adapts from there. All told, Jens reviews 128 data points on a daily basis. If he sees something that doesn't make sense to him, he sends that to the product teams. It's up to the product people at that point to home in on the number in question and figure out what's going on, and how to make it better.

Wrinkles: In-App Monetization Versus Advertising

One of the factors that can complicate this model is the monetization approach. As we've seen, there are a wide variety of ways in which companies monetize their mobile applications. Some advertising consists of in-app videos; in other cases, it can be a “promoted download” where the user is encouraged to try out another app. When this happens, the user leaves the current application—which can increase churn, reduce engagement, and hamper the experience.

Game developers have to find ways to carefully integrate monetization, particularly when it doesn't fit the theme of the game, and must measure the impact of these revenue sources on their players' subsequent behavior.

Key Takeaways

- Mobile apps make their money in a variety of ways.
- Most of the money comes from a small number of users; these should be segmented and analyzed as a distinct group. The key metric is average revenue per user, but you may also track the average revenue per *paying* user, since these “whales” are so distinct.

Mobile businesses are a lot like SaaS businesses: both try to engage users, extract money from them repeatedly, and reduce churn. You can jump back to Chapter 9 to learn more about SaaS metrics, or you can skip to Chapter 14 to find out how the stage of your business drives the metrics that matter to you.

* <http://www.wired.co.uk/magazine/archive/2012/01/features/test-test-test?page=all>

Model Four: Media Site

Advertising pays for the Internet. It's so easy to insert advertising into online content that for many companies, ad-based monetization is a fallback revenue source, which subsidizes a cheaply priced game or helps pay for the cost of operating a freemium product. Many websites rely on advertising to pay the bills, but few do it well. Those that do are generally content-focused, trying to attract repeat visitors who will spend a decent amount of time on the site and view many pages.

If your business model most closely resembles a media site, then your primary focus is sharing advertisers' messages with viewers, and getting paid for impressions, click-throughs, or sales. Google's search engine, CNET's home page, and CNN's website are all media sites.

Ad revenue comes in a variety of formats. Some sites make money when they display banners or have sponsorship agreements. Sometimes revenue is tied to the number of clicks on ads or to a kickback from affiliates. Sometimes it's simply display advertising shown each time there's an engagement with a visitor.

Media sites care most of all about click-through or display rates, because those are actual revenue, but they also need to maximize the time visitors spend on the site, the number of pages they see, and the number of unique visitors (versus repeat visitors who keep coming back), because this represents inventory—chances to show ads to visitors—and a growing reach of new people in whom advertisers might be interested.

Imagine a sporting news site that makes money from all four revenue models (sponsorship, display advertising, click-based advertising, and affiliate). The site has 20,000 unique visitors who come to the site an average of 12 times a month, and each time they visit, they spend an average of 17 minutes on the site (see Table 11-1).

Traffic	Example	Notes
Unique visitors per month	20,000	
Sessions per month	12	
Pages per visit	11	
Time on site per visit (m)	17	
Monthly minutes on site	4,080,000	
Monthly page views (inventory)	2,640,000	

Table 11-1. Calculating monthly page inventory

The site has a partnership with a local sports team, and a standing contract to display banners for it on every page in return for \$4,000 a month (see Table 11-2).

Sponsor revenue	Example	Notes
Monthly sponsorship rates	\$4,000	From your signed contract
Number of sponsored banners	1	From your web layout
Total sponsorship contribution	\$4,000	

Table 11-2. Calculating monthly sponsorship revenue

The site also has a display-ad contract that nets it \$2 for every thousand times someone sees a banner (see Table 11-3).

Display ad revenue	Example	Notes
Display ad rates (per thousand views)	\$2	Whatever you negotiate
Banners per page	1	From your web layout
Total display ad contribution	\$5,280	Page views \times display rate / 1,000

Table 11-3. Calculating display ad revenue

So far, these are relatively simple revenue models. But the company also has pay-per-click revenue. A portion of its web layout is reserved for ads from a third-party advertising network, which inserts ads relevant to the visitor and the site content (see Table 11-4).

Click-through revenue	Example	Notes
Click-through ads per page	2	From your web layout
Total click-through ads shown	5,280,000	Page views \times ads per page
Ad click percentage	0.80%	Depends on ad effectiveness
Total ad clicks	42,240	Ads shown \times click-through rate
Average revenue per click	\$0.37	From the auction rate for your ads
Total click-through contribution	\$15,628.80	Ad clicks \times revenue per click

Table 11-4. Calculating click-through revenue

The click-through revenue depends on what percentage of visitors click an ad and the amount paid for the click, which often depends on the value of a particular keyword. As a result, the site may write different kinds of content in order to attract more lucrative ad topics.

Finally, the site sells sports books through an affiliate relationship with an online bookstore. It features a “book of the week” on every page; it doesn’t make money when someone clicks the link to that book, but it does make money when someone *buys* the book (see Table 11-5).*

Affiliate revenue	Example	Notes
Affiliate ads per page	1	From your web layout
Affiliate ads shown	2,640,000	Ads per page × page views
Affiliate ad click percentage	1.20%	Depends on ad effectiveness
Total affiliate ad clicks	31,680	Ads shown × affiliate ad clicks
Affiliate conversion rate	4.30%	Ability of the affiliate partner to sell stuff
Total affiliate conversions	1,362.24	Ad clicks × conversion rate
Average affiliate sale value	\$43.50	Shopping cart size of the affiliate partner
Total affiliate sales	\$59,257.44	Revenue the affiliate made
Affiliate percentage	10%	Percentage of affiliate revenue you get
Total affiliate contribution	\$5,925.74	Affiliate sales × affiliate percentage

Table 11-5. Calculating affiliate revenue

The affiliate model is complex (and often, site operators won’t know what the visitor’s purchases were—they’ll just get a check). It relies on several funnels: the one that brought the visitor to the site, the one that convinced the visitor to click, and the one that ended in a purchase on a third-party site.

Our sports site is taking advantage of four distinct media monetization models. To do this, it’s had to set aside a considerable amount of its screen real estate to accommodate a sponsor, a display banner, two click-through ads, and an affiliate ad for a book. Of course, this undermines the site’s quality and leaves less room for valuable content that will keep visitors

* Depending on the merchant, the affiliate may make money from the *entire* purchase, not just the item listed on the affiliate site. If you buy a book on Amazon, and also buy a computer, the affiliate that referred you via the book makes a percentage of the computer sale—which gives Amazon a strong advantage when competing for affiliate ad real estate.

coming back. Striking a balance between commercial screen space and valuable content is tricky.

Pricing for sponsorships and display advertising is often negotiated directly, and depends on the reputation of the site, since it's a subtle form of endorsement and the advertiser is hoping for credibility. Ad networks set pricing for affiliate and pay-per-click advertising based on bidding by ad buyers.

Media sites involve a lot of math; sometimes they feel like they're being designed by spreadsheets rather than editors. Many of the vanity metrics we've warned you about earlier are actually relevant to media sites, since those sites make money from popularity.

Ultimately, then, media sites care about:

Audience and churn

How many people visit the site and how loyal they are.

Ad inventory

The number of impressions that can be monetized.

Ad rates

Sometimes measured in *cost per engagement*—essentially how much a site can make from those impressions based on the content it covers and the people who visit.

Click-through rates

How many of the impressions actually turn into money.

Content/advertising balance

The balance of ad inventory rates and content that maximizes overall performance.

Audience and Churn

The most obvious metric for a media site is audience size. If we assume that an ad will get industry-standard click-through rates, then the more people who visit your site, the more money you'll make.

Tracking the growth in audience size—usually measured as the number of unique visitors a month—is essential. But measuring unique visitors can lead us astray if we focus on it too much; as we've noted earlier, engagement is much more important than traffic, so knowing how many visitors you're losing, as well as adding, is critical.

You can calculate audience churn on a media site by looking at the change in unique visitors in a specific month and the number of new visitors that month (see Table 11-6).

	Jan	Feb	Mar	Apr	May	June	July
Unique visitors	3,000	4,000	5,000	7,000	6,000	7,000	8,000
Change from last month	N/A	1,000	1,000	2,000	(1,000)	1,000	1,000
New (first-time) visitors	3,000	1,200	1,400	3,000	1,000	1,200	1,100
Churn	N/A	200	400	1,000	2,000	200	100

Table 11-6. Calculating audience churn

In this example, a website launches in January, and gets 3,000 unique visitors that month. Each month, it adds a certain number of unique first-time visitors to the site, but it also loses some visitors. You can calculate the churn by subtracting the number of unique first-time visitors from the change over the previous month—the new visitors are “making up” the last month’s loss.

Note that sometimes an effective campaign can mask a churn problem. In this example, even though the site grew by 2,000 unique visitors in April, it managed to lose 1,000 visitors as well.

If you have the ability to test different layouts—one with fewer ads, for example—across visitor segments, you can determine the level of “churn tax” you’re paying for having commercial content on the page. Then you can balance this against the revenue you’re earning from advertising.

Inventory

Tracking unique visitors is a good start, but you need to measure ad inventory as well. This is the total number of unique page views in a given period of time, since each page view is a chance to show a visitor an ad. You can estimate inventory from visitors and pages per visit, but most analytics packages show the number automatically (see Table 11-7).

	Jan	Feb	Mar	Apr	May	June	July
Unique visitors	3,000	4,000	5,000	7,000	6,000	7,000	8,000
Pages per visit	11	14	16	10	8	11	13
Page inventory	33,000	56,000	80,000	0,000	48,000	77,000	104,000

Table 11-7. Calculating page inventory

The actual inventory depends on page layout and how many advertising elements are on each page.

PATTERN

Performance and the Sessions-to-Clicks Ratio

One other factor to consider is the sessions-to-clicks ratio. Every website loses a certain number of visitors before they ever come to the site. For every 100 web searches that link to you and get clicked, roughly 95 will actually land on your site. Basically, this says that five of those people hit the back button, or decide your site is taking too long to load, or change their mind about visiting.

The ratio of sessions (on your site) to clicks (from search links or referring links) is an indicator of web performance and reliability. Shopzilla's Jody Mulkey and Phillip Dixon did a detailed analysis of the impact of performance improvement on the sessions-to-clicks ratio when the company rebuilt its site to make it load quickly and reliably.* Ultimately, the makeover landed the site 3–4% more visitors. But within a short while, the site slowed down again as a result of ongoing changes, and the ratio worsened once more. Keeping a site fast is a constant battle.

* Phillip Dixon presented the results of Shopzilla's makeover, as well as its initial baseline, at Velocity Santa Clara in 2009. The full video is available at <http://www.youtube.com/watch?v=nKsxy8QJtds>.

Ad Rates

The rate advertising networks will pay you for an ad depends on your content and the going rate for a particular search term or keyword. For a straight-up media site, the ad rate is driven by the topic of your site and the content you publish. For a social network, the demographics of your audience drive ad rates. Visitor demographics will become increasingly important as social platforms like Facebook introduce third-party-placed advertising based on demographic segments—you'll get paid based on *who* your visitors are rather than *what* your site contains.

Content/Advertising Trade-off

The big decision any media site makes is how to pay the bills without selling out. This manifests itself in two ways. First, ad space: too many ads leads to lousy content and reduced visitor loyalty. Second, content: if your content is written to attract lucrative ad keywords, it'll feel forced and seem like a paid promotion.

Layout design and copywriting style are aesthetic issues, but those aesthetic decisions are grist for the analytical mill. If you're serious about content, you need to test different layouts for revenue-versus-churn, and different copy for content-versus-ad-value.

There are commercial tools to help with this. Parse.ly, for example, tries to analyze which content is getting the most traction. You might also segment key metrics like revenue or percentage of visitors who exit on a particular page by author, topic, or layout.

Visualizing the Media Business

Figure 11-1 represents a user's flow through a media business, along with the key metrics at each stage.

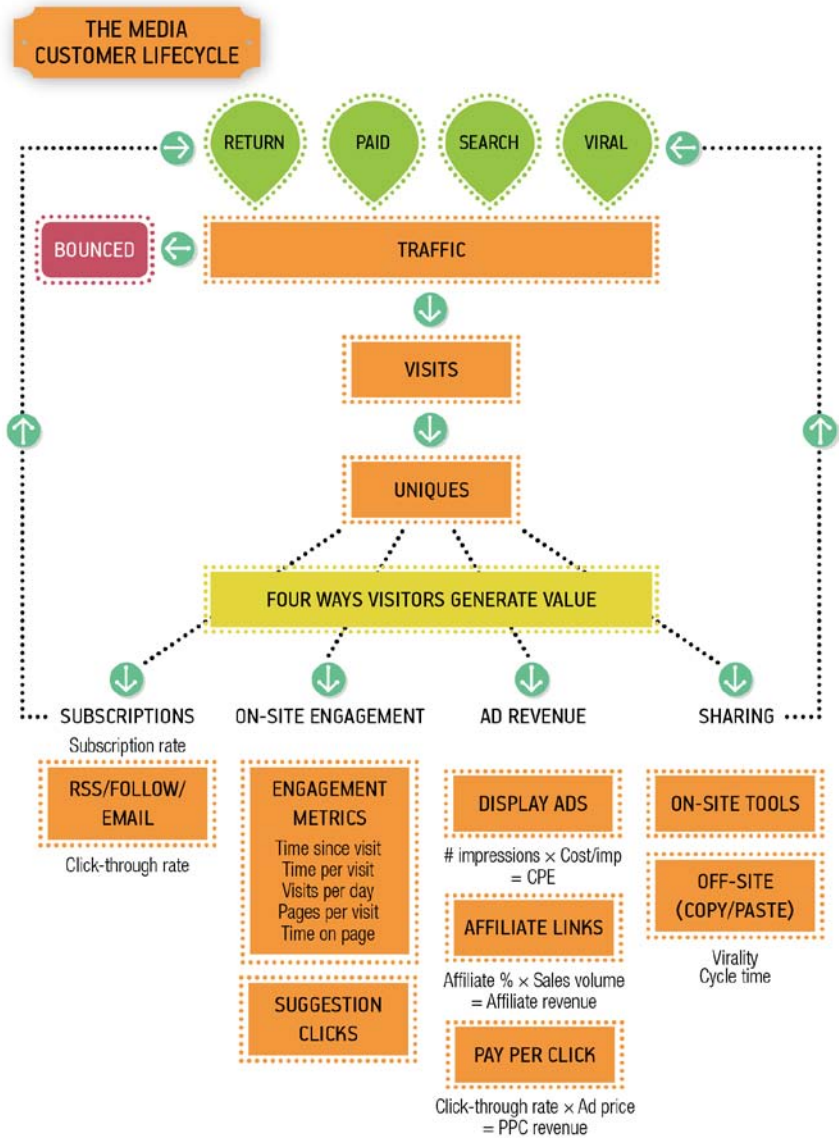


Figure 11-1. Calculating the value of media site customers is complicated

Wrinkles: Hidden Affiliates, Background Noise, Ad Blockers, and Paywalls

The variety of business relationships in online media can make finding the right key performance indicator (KPI) complex. Here are four examples of the kinds of complexity you need to watch out for.

Hidden affiliate models

Pinterest, an online pinboard of images, used to rewrite URLs for pictures of products its users had uploaded using a tool called Skimlinks. But as the site grew, its affiliate revenue quickly outstripped that of other big networks,* and it was called out for the practice.†

Pinterest was able to monetize traffic quickly with this strategy, and cared not only about how many people contributed content (a user-generated content, or UGC, metric), but also about the likelihood that someone would click on a picture and in turn make a purchase. Affiliate rewriting is a good way to monetize user-generated content without ads—effectively turning everything that’s posted into an ad—but complicates business modeling, and can backfire.

Background noise

In one test, blank ads bearing no information had a click-through rate of roughly 0.08%—comparable to that of some paid campaigns.‡ The ads invited those who’d clicked to explain why they did so; respondents were evenly divided between simple curiosity and accidental clicking. If your ads are getting revenues that are hardly better than the background noise a blank ad would get, you need to find out why.

Ad blockers

Technical users sometimes install ad-blocking software in their browsers that blocks ads from known ad-serving companies. This reduces your inventory, and can mess with your analytics. Reddit actually runs some ads containing funny content, mini-games, or messages thanking visitors for not blocking ads.

* <http://www.digitaltrends.com/social-media/pinterest-drives-more-traffic-to-sites-than-100-million-google-users/>

† <http://lsocial.com/2012/02/pinterest-modifying-user-submitted-pins/>

‡ A June 2012 study by the Advertising Research Foundation conducted across a half-million ad impressions showed these rates; the rate varied by type of site. See <http://adage.com/article/digital/incredible-click-rate/236233/>.

Paywalls

Unsatisfied with the revenues from online advertising, some media sites run paywalls that charge users to access content. The paywall model runs the spectrum from voluntary donations (usually in the form of a pop up when the visitor first arrives) to fully paid sites where content is accessible only for a recurring fee.

Some media sites adopt a middle ground where visitors can access a quota of articles each month, as shown in Figure 11-2, but must pay to see more than this limit. Such sites are trying to strike a balance between “referred” content (e.g., an article mentioned on Twitter, which might generate ad revenue) and “subscribed” content (where the site is a user’s primary daily news source).

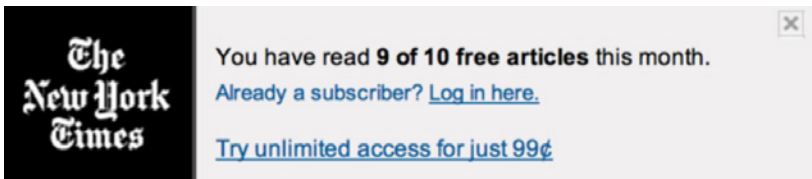


Figure 11-2. The inexorable rise of the paywall

The paywall model complicates analytics because there’s a trade-off between ad and subscription revenue, and because there’s a new e-commerce funnel to measure: trying to convert casual referred visitors into recurring-revenue subscribers.

Key Takeaways

- For media sites, ad revenue is everything—but advertising may include displays, pay-per-view, pay-per-click, and affiliate models, so tracking revenues is complex.
- Media sites need inventory (in the form of visitor eyeballs) and desirability, which comes from content that attracts a demographic advertisers want.
- It’s hard to strike a balance between having good content and enough ads to pay the bills.

Media sites traditionally generate their own content, in the form of blogging, videos, and reported articles. But more and more of today’s online content is from users themselves. If you want to learn more about the user-generated content business model and the metrics it tracks, continue to Chapter 12. If, on the other hand, you want to get right to the stages of a startup and how they affect your media business, jump to Chapter 14.

Model Five: User-Generated Content

You might think that Facebook, reddit, and Twitter are media sites, and you'd be right: they make their money from advertising. But their primary goal is rallying an engaged community that creates content. Similarly focused sites like Wikipedia make their money from other sources, such as donations.

We call these businesses *user-generated content* (UGC) sites. They deserve their own business model because their primary concern is the growth of an engaged community that creates content; without user activity, the sites stop functioning entirely. If you've decided that you're in the UGC business, then this chapter explains what metrics you'll need to track.

In this model, you're focused on the creation of good content, which means not only posts and uploads but also votes, comments, spam flagging, and other valuable activity. UGC is about the amount of good content versus bad, and the percentage of users who are lurkers versus creators. This is an *engagement funnel*,* similar to the traditional conversion funnels of an e-commerce model—only instead of moving prospects toward buying, you're constantly trying to move your user population to higher and higher levels of engagement, turning lurkers into voters, voters into commenters, and so on.

* Altimeter Group's Charlene Li refers to this as an *engagement pyramid*.

Wikipedia is an example of a UGC site—good, reliable, well-referenced content helps the site; flame wars or frequent edits between two battling contributors are bad for it. Just as an e-commerce site creates a funnel out of the steps through which a buyer must proceed, a UGC site measures the percentage of users who behave in certain ways. Revenue often comes from advertising or donations, but it’s incidental to the core business of engaging users.

Consider a social network focused on link sharing, such as reddit. Anyone can read content and share it using social buttons on the site. Once a user has an account, she can vote content up or down, comment on content, or post content of her own. She can create her own group discussion around a topic. And she can use her account to message other users privately.

The tiers of engagement create a natural funnel, from the completely disengaged, fly-by visitors who come just once, to the hardcore. One of the core functions of the site is to acquire one-time visitors and turn them into users with accounts, and ultimately, into collaborators. Figure 12-1 shows an example engagement funnel, and lists what reddit, Facebook, and YouTube call *tiers*. Note that not every UGC site has all of these tiers.

EXAMPLES			
	reddit	Facebook	Youtube
DRIVE-BY (ONE-TIME) VISITORS	Visitors	Visitors	Viewers
RETURNING VISITORS	Lurkers	Lurkers	Viewers
ENROLLED USERS	redditors	Users	Google account holders
VOTERS/FLAGGERS	Vote up/down	Like, flag	Thumb up/down
COMMENTERS	Post a reply	Post a comment	Post a comment
CONTENT CREATORS	Original posters (OP)	Poster	Uploader
MODERATORS	Subreddit mods	Group admin	
GROUP CREATORS	Subreddit creators	Event, place, or group creators	Channel owner

Figure 12-1. Every social network in the world just wants you to love it

This pattern of gradually increasing engagement isn't true only of websites—it's an archetype that happens time and again online. Twitter is similar to reddit: people use it to chat, to share links, and to comment on links. Instead of up-voting, there's a retweet button; instead of down-voting, there's blocking. Flickr, Facebook, LinkedIn, and YouTube all have roughly similar engagement tiers.

A UGC company cares about several metrics in addition to those we've seen in the media model in Figure 12-1:

Number of engaged visitors

How often people come back, and how long they stick around.

Content creation

The percentage of visitors who interact with content in some way, from creating it to voting on it.

Engagement funnel changes

How well the site moves people to more engaged levels of content over time.

Value of created content

The business benefit of content, from donations to media clicks.

Content sharing and virality

How content gets shared, and how this drives growth.

Notification effectiveness

The percentage of users who, when told something by push, email, or another means, act on it.

Visitor Engagement

A UGC site is successful when its visitors become regulars. As we've seen with SaaS churn, we look at recency to understand this—that is, when was the last time someone came back to the site? One quick way to measure this is the day-to-week ratio: how many of today's visitors were here earlier in the week? It's an indicator of whether people are returning on a regular basis, even if users don't create an account.

Another metric is the average days since last visit, although you need to exclude users who are beyond some cutoff limit (such as 30 days) from this calculation; otherwise, churned users will skew your numbers. For users who have accounts and take actions, you can measure engagement in other ways: days since last post, number of votes per day, and so on.

Content Creation and Interaction

User participation varies wildly by UGC site. On Facebook, every user logs in to do more than view a profile because it's a “walled garden” for content. Reddit is more open, but still has a high percentage of users who log in, because being logged in is required to up-vote posts.* On the other hand, sites like Wikipedia or YouTube, where the vast majority of users are simply consuming content, must rely on passive signals such as clickstreams or time on page, which serve as a proxy for ratings.

Interaction also varies significantly depending on what you're asking users to do. A few years ago, Rubicon Consulting published a study of online community participation rates. It looked at how often respondents performed certain actions online. As Figure 12-2 shows, there's significant variance in levels of engagement.

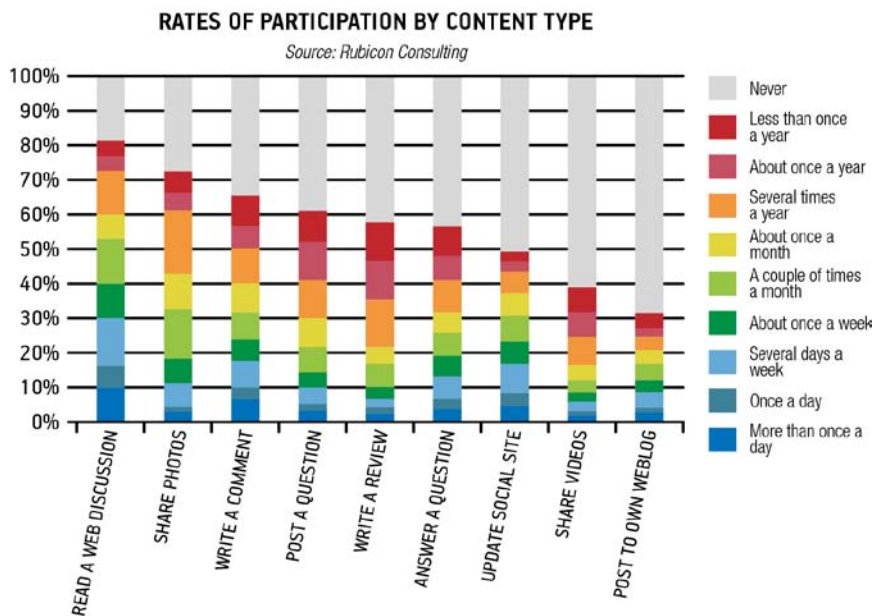


Figure 12-2. *So much for a community to do, so little time*

Early on, UGC sites need to solve a chicken-and-egg problem. They need content to draw in users, and users to create content. Sometimes, this content can be seeded from elsewhere: Wikimedia was originally going to be a site written by experts, but eventually pivoted to a community-edited

* It may also be because the login process doesn't demand an email confirmation—meaning users can be anonymous.

model—it overcame the chicken-and-egg issue by having content in place at the start.

The rate of content creation and the rate of enrollment matter a lot at the outset. Later, the question becomes whether good content is rising to the top, and whether people are commenting on it—signs that your user base cares about the discussion and is building a community.

Engagement Funnel Changes

On reddit, there are several tiers of engagement: lurking, voting, commenting, subscribing to a subreddit, submitting links, and creating subreddits. Each tier represents a degree of involvement and content generation by a user, and each type of user represents a different business value to the company. Every UGC site has a similar funnel, though the steps may be different.

The steps in the funnel aren’t mutually exclusive—someone can comment without voting, for example—but these steps should be arranged in an order of increasing value to your business model as a user moves down the funnel. In other words, if someone who posts content is “better” for you than someone who simply shares a story, she’s in a later tier of the funnel. The key is to move as many users into the more lucrative tiers as possible (making more content and better selection of content that will be popular).

One way to visualize this is by comparing the tiers of engagement over time. This is very similar to the SaaS upselling model: for a given cohort of users, how long does it take them to move to a more valuable stage in the engagement funnel? To see this, lay out the funnel by time period (for example, per month) or by cohort (see Table 12-1).

Totals	Jan	Feb	Mar	Apr
Unique visitors	13,201	21,621	26,557	38,922
Returning visitors	7,453	14,232	16,743	20,035
Active user accounts	5,639	8,473	9,822	11,682
Active voters	4,921	5,521	6,001	7,462
New subscribers/members	4,390	5,017	5,601	6,453
Active commenters	3,177	4,211	4,982	5,801
Active posters	904	1,302	1,750	2,107
Active group creators	32	31	49	54

Table 12-1. Visitor funnel by monthly cohort

If we assume that each tier of the engagement funnel does all the “previous” actions—for example, commenters vote, posters comment, and so on—we can display the change over time as a stacked graph (see Figure 12-3).

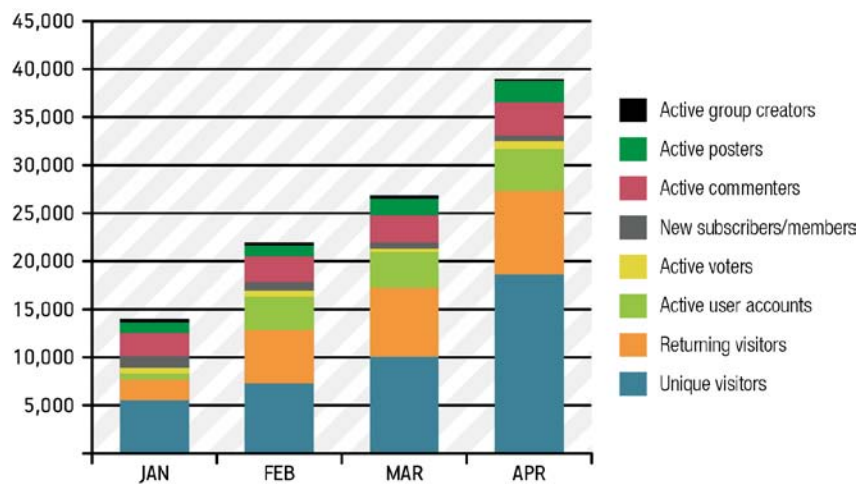


Figure 12-3. Can you split your users into distinct groups based on behavior?

This gives us an idea of growth for each segment, but it doesn’t really show us what parts of the engagement process are getting better or worse. For this, we need to first calculate the conversion rates of the engagement funnel for each month (see Table 12-2).

Change from past period	Jan	Feb	Mar	Apr
Unique visitors	N/A	163.8%	122.8%	146.6%
Returning visitors	N/A	191.0%	117.6%	119.7%
Active user accounts	N/A	150.3%	115.9%	118.9%
Active voters	N/A	112.2%	108.7%	124.3%
New subscribers/members	N/A	114.3%	111.6%	115.2%
Active commenters	N/A	132.5%	118.3%	116.4%
Active posters	N/A	144.0%	134.4%	120.4%
Active group creators	N/A	96.9%	158.1%	110.2%

Table 12-2. Conversion rates of the engagement funnel by month

Once we know the conversion rates for each step, we can look at relative changes in rates from month to month (see Table 12-3).

Change in funnel	Jan	Feb	Mar	Apr
Unique visitors	N/A	N/A	N/A	N/A
Returning visitors	N/A	↑ 116.6%	→ 95.8%	↓ 81.6%
Active user accounts	N/A	↓ 78.7%	→ 98.5%	→ 99.4%
Active voters	N/A	↓ 74.7%	↓ 93.8%	↑ 104.5%
New subscribers/ members	N/A	↑ 101.9%	↑ 102.7%	↓ 92.7%
Active commenters	N/A	↑ 118.1%	↑ 108.8%	↓ 93.6%
Active posters	N/A	↑ 108.7%	↑ 113.6%	↑ 103.4%
Active group creators	N/A	↓ 67.3%	↑ 117.6%	↓ 91.5%

Table 12-3. Relative changes in conversion rates by month

With this data, we can see which things got better or worse based on changes we’ve made, or the different experience a particular cohort had on the site. For example, a smaller percentage of first-time visitors returned to the site in March, but a greater percentage of people commented and created posts that month. This lets us make changes and keep score.

Eventually, you’ll hit a “normal” engagement funnel where a stable percentage of people are participating in each stage. This is OK; UGC sites have a power curve of content creation, where a small number of people create the vast majority of content. We’ll give you some examples of ideal conversion rates for engagement funnels in Chapter 27.

Value of Created Content

The content your users create has a value. That might be the number of unique visitors who see it (in the case of a site like Wikipedia), the number of page views that represent ad inventory (Facebook), or a more complicated measurement like affiliate revenues generated by clicks on content users post (as in the Pinterest affiliate model).*

Regardless of how you value content, you’ll want to measure it by cohort or traffic segment. If you’re trying to decide where to invest in visitor acquisition, you’ll want to know which referring sites bring valuable users. Perhaps you’re looking for a particular demographic (as Mike Greenfield

* Earlier we warned that the number of unique visitors was a vanity metric, but that’s when it’s applied to site growth. As a measure of the value of an individual piece of content, it’s a useful rating.

did when he compared engagement and value across user segments on Circle of Friends and launched Circle of Moms as a result).*

Content Sharing and Virality

A UGC site thrives on its visitors' behavior, and key among those behaviors is sharing. YouTube monetizes user content, relying on popular videos with virality to drive traffic and ad inventory. If your site is an unwallled garden—that is, users can share freely with the rest of the world—then tracking how content is shared is critical. It's less important for walled-garden sites like Facebook, whose goal is to keep users within the application.

While tweeting and liking content is useful, remember that a lot of sharing happens through other systems—RSS feeds and email, in particular. In fact Tynt, which makes tools for publishers to tag sharing when a link is copied and pasted, estimates that as much as 80% of sharing happens through email.†

You want to track how content is shared for several reasons:

- You need to know if you're achieving a level of virality that will sustain your business.
- You want to understand how content is shared and with whom. If every reader sends a URL to someone else, and that person then returns, you need to know that the visit was the result of a share, because the value of the content wasn't just the ad inventory it presented, but also the additional visit it generated.
- It will help you understand whether you should consider a paywall-style monetization strategy.

Notification Effectiveness

We used to design exclusively for the Web. In recent years, designers rallied around portable devices with cries of “design for mobile” or “mobile first.” But there's good reason to think that the future of applications isn't mobility—it's notification.

Today's mobile device is a prosthetic brain. We rely on it to remind us of meetings, tell us when others are thinking of us, and find our way home. Smart agent technologies like Siri and Google Now will only reinforce this.

* See “Case Study: Circle of Moms Explores Its Way to Success” in Chapter 2.

† <http://www.mediapost.com/publications/article/181944/quick-whats-the-largest-digital-social-media-pla.html>

Already, our mobile devices' notification systems are a battleground, with applications fighting for our attention.

In a UGC model, the ability to keep pulling users back in through notifications is an essential part of sustaining engagement.

Fred Wilson calls mobile notification a game changer:*

Notifications become the primary way I use the phone and the apps. I rarely open Twitter directly. I see that I have "10 new @mentions" and I click on the notification and go to [the] Twitter @mention tab. I see that I have "20 new checkins" and I click on the notification and go to the Foursquare friends tab.

He cites three main reasons why this is such a significant shift:

First, it allows me to use a lot more engagement apps on my phone. I don't need them all on the main page. As long as I am getting notifications when there are new engagements, I don't really care where they are on the phone.

Second, I can have as many communications apps as I want. I've currently got SMS, Kik, Skype, Beluga, and GroupMe on my phone. I could have plenty more. I don't need to be loyal to any one communication system, I just need to be loyal to my notification inbox.

And finally, the notification screen is the new home screen. When I pull out my phone, it is the first thing I do.

You measure notification effectiveness in much the same way as you measure email delivery rates: you're sending out a certain number of messages, and some of those messages produce the outcome you're hoping for. This is true whether those messages are sent by email, SMS, or mobile application.

Visualizing a UGC Business

Figure 12-4 represents a user's flow through a UGC business, along with the key metrics at each stage.

* http://www.avc.com/a_vc/2011/03/mobile-notifications.html

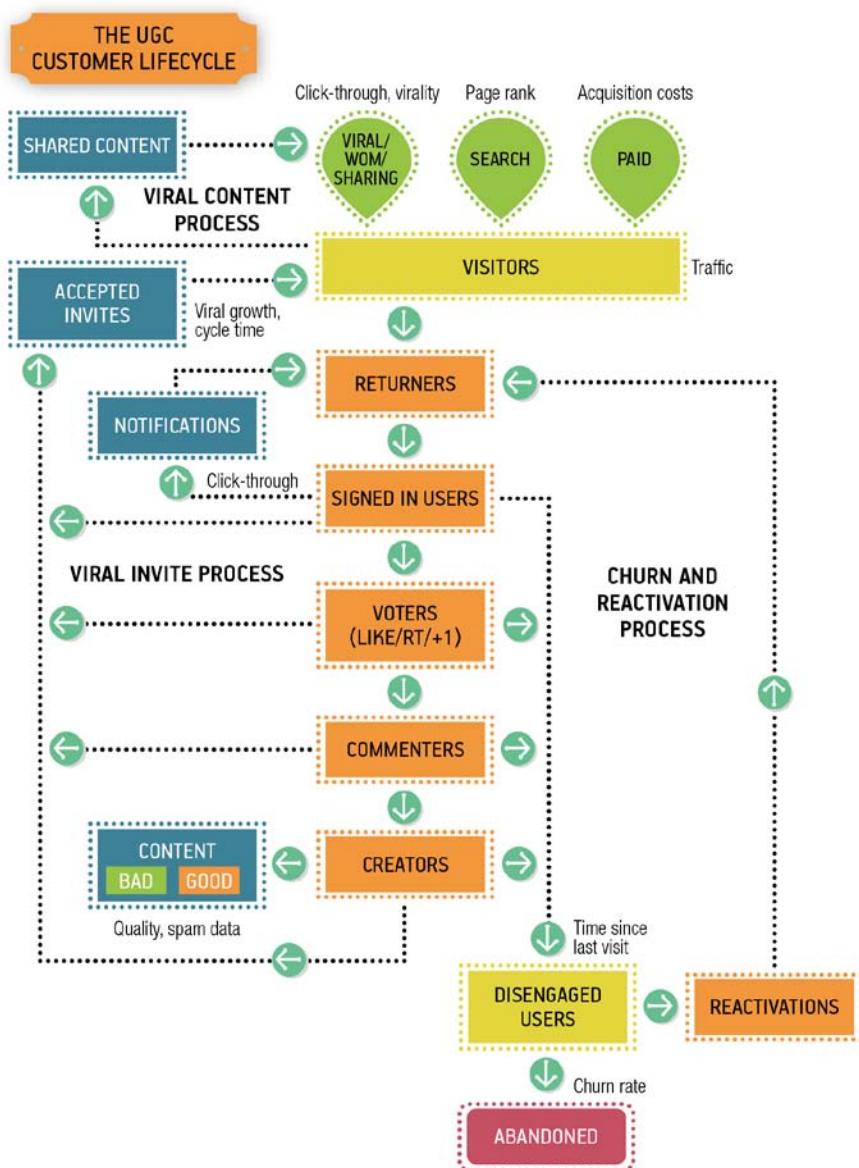


Figure 12-4. UGC is all about turning visitors into creators

Wrinkles: Passive Content Creation

Just as notifications happen in the background but are in many ways the new foreground interface, so too does content creation often happen stealthily. Google has been able to pack its social network, Google+, with

information and updates across its user base simply by enabling background features like Latitude and image uploads, and by linking to external sites based on your profile.

As more and more mobile devices become sensors that track our health, our location, our purchases, and our habits, we'll see a split into active content generation (sharing a link, writing a post) and passive content generation (automatically populating a timeline with our actions; helping the system learn from our clickstream). This shift gives a huge advantage to those who make the tools for collecting data—mobile device makers, payment companies, and so on.

Consider three changes on the horizon: ambient check-ins, in which your smart device registers changes in location and shares them; digital wallets designed to store loyalty, ticket, and membership data; and near-field communications technology that make it possible to share information or pay by bumping your device against something. These three technologies alone will provide a treasure trove of passive data that, given the right permissions, can populate someone's timeline in detailed ways that might pass for user-generated content, even when they're happening in the background.

While this doesn't change the UGC world today, it'll gradually cloud the simple sharing measurements we have at the moment and introduce a lot more noise—is a user engaged, or did he simply forget to turn off some kind of passive engagement? Are certain kinds of passive sharing better for the business? If so, what can we do to encourage or reward them?

Key Takeaways

- Visitor engagement is everything in UGC. You track visitors' involvement in an "engagement funnel."
- Many users will lurk, some will contribute lightly, and others will become dedicated content creators. This 80/20 split exists throughout the activities you want your users to accomplish.
- To keep users coming back and engaged, you'll need to notify them of activity through email and other forms of "interruption."
- Fraud prevention is a significant amount of work for a UGC site.

The UGC business might focus on user contribution above all else, but it still pays its bills with advertising most of the time. If you want to learn more about advertising and the media business, head back to Chapter 11. If you want to get straight to the stages of a startup and how they affect metrics, jump to Chapter 14.

Model Six: Two-Sided Marketplaces

Two-sided marketplaces are a variation on e-commerce sites, but they're different enough to warrant a separate discussion. If, after reading Chapter 7, you've concluded that you're running this kind of company, here's what you need to know.

In this model, the company makes money when a buyer and seller come together to complete a transaction. While eBay is undoubtedly the most famous example of a two-sided marketplace, the underlying pattern is fairly common. Consider the following business models, all of which have an aspect of a two-sided market:

- Real estate listing services allow prospective buyers to identify properties by a wide range of criteria, and then extract a fee for setting up the transaction, either as a one-time cost or a percentage.
- Indiegogo lets artists list projects and collect the support of backers. Backers are able to browse projects and find those they want to support. The site takes a percentage of monies raised.
- eBay and Craigslist let sellers list and promote items, and let buyers purchase from them. In the case of Craigslist, a very small number of transactions (rentals in certain cities, for example) cost money, making the rest of the site free.
- App stores let software developers list their wares in exchange for sharing the revenues. The app store not only handles the catalog of apps and the delivery, it also distributes updates, helps with litigation, and manages currency transactions.

- Dating sites allow an inventory of prospective partners to browse one another, and charge a fee for completing an introduction or for revealing additional information in a paid subscription.
- Hotwire and Priceline let hotels list additional inventory, then find buyers willing to buy it at a discount. They hide the identity of the hotel until after the purchase.

All of these examples include a shared inventory model and two stakeholders—buyers and sellers, creators and supporters, prospective partners,* or hotels and travellers. They all make money when the two stakeholders come together, and they often differentiate based on a particular set of search parameters or qualifications (e.g., apartments that have been vetted, seller ratings). And they all need an inventory to get started.

In this section, we’re going to define two-sided marketplaces more narrowly, which will exclude some of the aforementioned examples. In our definition:

- The seller is responsible for listing and promoting the product. A real estate service that simply publishes realtor listings wouldn’t qualify, but a for-sale-by-owner site would.
- The marketplace owner has a “hands off” approach to the individual transactions. Sites like Hotwire that create the hotel profiles wouldn’t be included.
- The buyer and seller have competing interests. In most marketplace models the seller wants to extract as much money as possible, while the buyer wants to spend as little as possible. In a dating site, regardless of gender differences, both parties have a shared interest—a compatible partner—so we’ll leave them out of this discussion.

Two-sided marketplaces face a unique problem: they have to attract both buyers and sellers. That looks like twice as much work. As we’ll see in some of the case studies ahead, companies like DuProprio/Comfree, Etsy, Uber, and Amazon found ways around this dilemma, but they all boil down to one thing: *focus on whomever has the money*. Usually, that’s buyers: if you can find a group that wants to *spend* money, it’s easy to find a group that wants to *make* money.

* While there’s technically only one stakeholder in a dating site—someone who wants to date—many of the sites that focus on heterosexual relationships treat men and women differently (for example, free enrollment for female users). We mention it here because the technique has been used to break the chicken-and-egg problem from which marketplaces suffer, but as online dating becomes more mainstream this is less common.

CASE STUDY | What DuProprio Watches

DuProprio/Comfree is the largest for-sale-by-owner marketplace, and second-most-visited real estate network in Canada. Founded in 1997 by co-president Nicolas Bouchard, it lists 17,000 properties and has roughly 5 million visits a month. The company charges a one-time fee of around \$900 for a listing, assistance with pricing, signage, and HDR photography. Additional tools, from legal advice to real estate coaching, are available for an extra fee. The company also has affiliate listing relationships with a prominent newspaper.

Nicolas was Lean before Lean came along. The son of a realtor and an entrepreneur from a young age—already running a hardwood flooring business while in high school—he helped his father build a website in the early days of the Web. Then he had an epiphany. “I started to notice the black-and-orange ‘for sale by owner’ signs in hardware stores. So I made the connection, and said, ‘let’s do a real estate website for owners.’ I launched it in my parents’ basement.”

The first version of the website was static, built on Microsoft Frontpage. There was no staff. Nicolas acquired new sellers by scouring the classified ads and driving around looking for “for sale by owner” signs, convincing sellers to list with his site. “Back then, the only KPI was the number of signs we had on people’s lawns—because that’s how buyers found my website,” he recalls. “That, and of course, the number of properties listed on the website.”

Gradually, Nicolas found other sources of potential sellers, looking at sites like Craigslist and Kijiji. “It was the beginning of the Internet,” he says. “I was still playing with how to pitch the service and how to use the Web to my advantage, and that of my clients.”

In early 2000, once the company had found some traction, it switched from a static site to a dynamic one, and manually transferred all the seller listings to the new site. Until that point, it had only rudimentary analytics—little more than a page hit counter. It added Webtrends for analytics. With the dynamic version of the site came a seller login, which allowed sellers to update data on their property by themselves. “At this point, sellers could see more about how they were doing, including how many times their listing appeared in search results, how many times the listing was clicked, and so on,” he says.

A couple of years later, the company added client-side logins. This allowed prospective buyers to set their search criteria, and eventually to subscribe to notifications when suitable properties came up for sale. The emphasis was on search.

“With the advent of the dynamic site, we tracked the number of visitors versus the number of seller subscriptions, because that’s bread and butter to us,” says Nicolas. But the data still wasn’t precise: the company was still focusing on visits, not visitors.

One reason for this was that the two-sided marketplace was more complicated than it might seem. Often, someone selling a house was also looking for a new one—which made it hard to segment traffic cleanly between the two groups—so Nicolas settled for a simple rule of thumb. “At some point we had a metric that 1,000 visits on the website equals 1 subscription.” Despite the coarseness of this baseline, it was enough to draw a line in the sand. “This was a rudimentary conversion rate,” he says. “The objective was to generate more conversions per visit.”

As the company became more sophisticated about analysis, it improved its analytics further. “We started to look at the conversion rate of visitors coming to the subscription page, where we display the various packages we offer,” he says. “We started to be a bit more disciplined, but this was long before we did any real A/B testing.” The company was making modifications to its website to see if they improved conversions or the visits-to-listings ratio, but this was still a month-by-month process.

While the company has detailed analytics from Google today, Nicolas doesn’t concern himself with details. “There are always more visitors looking to buy a property,” he points out. He also doesn’t focus as much on buyer-side account creation. “In Québec alone, we have 3 millions visits a month, and 1.2 million unique visitors a month, but only a small fraction of those—5% or less—create an account.”

Nicolas does care a lot about competitors, however. “We want to be as good as possible, and better than real estate agents. We have data from the Canada Mortgage and Housing Corporation and the Canadian Real Estate Board, so we know exactly how many properties were listed and sold. We benchmark ourselves against these numbers all the time, region by region.”

Today, the company has three big goals. It wants to convince sellers to list their property on the site, it wants to convince buyers to register for notifications when a property becomes available, and it wants to sell the properties.

DuProprio is a great example of how a company moves through several stages as it grows. The metrics the company tracked changed over time:

- Early on, a static site was fine—the focus was on acquisition (signs on lawns, volume of houses listed).
- Then its focus shifted to the visitor-to-listing ratio, which was a measure of whether the marketplace was healthy.
- As the marketplace emerged, it focused on revenue metrics such as the list-to-sold ratio, and the average package sale price.
- Now it's adding new metrics to optimize the email click-through rate, search results, and use of its recently launched mobile applications. "Currently, because of the way the system is built, it's hard to know where blank searches are occurring on the website, but it's something we're working on."

Ultimately, in this two-sided marketplace, Nicolas has clearly chosen to focus on the source of the money.

"For us, today, one big metric is the number of sales. An even bigger metric than that is the sold-to-list ratio: what's the total number of properties listed versus the total number of properties sold," he says. "If the property doesn't sell, we don't have a business. There will be no word of mouth, no good reviews, no 15,000 testimonials from satisfied sellers, no 'I sold' stickers on lawn signs. Even if tomorrow I'm listing 10,000 more properties, if no properties are selling, I'm dead."

Summary

- Early on, a marketplace can grow its inventory by hand, using decidedly low-tech approaches. Do things that don't scale.
- For some marketplaces, a per-listing or per-transaction fee, rather than a commission, works well.
- If you can build buyer attention, it'll be easy to convince sellers to join you, so go where the money is.
- A static, curated site can be enough to prove the viability of a big-ticket, slow-turnover marketplace.
- Ultimately, volume of sales, and the resulting revenue, is the only metric that matters.

Analytics Lessons Learned

Start with the minimum marketplace that proves you have demand, supply, and a desire for buyers and sellers to transact. Then find ways of making money from that activity. The metrics you track will depend on transaction size, frequency, and other unique characteristics of the business. But the fundamentals are the same: revenue from transactions.

Imagine you're launching a two-sided marketplace for secondhand game consoles. Those with a console to sell can list it, and those looking for a console to buy can browse by a variety of criteria. The transactions are handled through PayPal, and you retain a portion of the proceeds above a minimum amount.

Because you're not a vendor of consoles yourself, you need to find a way to produce *either* an inventory of consoles, *or* a large group of customers. You need to pick which side of the market you're going to "seed."

If you want to seed the seller side, you might crawl Craigslist and approach console owners to see if they have inventory, encouraging them to list items. If you want to seed the buyer side, you might set up a forum for nostalgic game players, bringing them together and inviting them from social sites.

You could create an artificial inventory by selling consoles to start with, and then gradually adding inventory from others. Car-service provider Uber overcame the chicken-and-egg problem in new markets by simply buying up available towncars: when the company launched in Seattle, it paid drivers \$30 an hour to drive passengers around, and switched to a commission model only once it had sufficient demand to make it worthwhile for the drivers. *The company created supply.*

On the other hand, if you want to seed the buyer side, you probably need to pick something for which you can command an initial inventory, then purchase some; or you might take orders with a promise of fulfilling them later, knowing you have access to that inventory. Amazon, for example, started selling books, which allowed it to streamline its order, search, and logistics processes. Then it could offer a broader range of its own goods. Eventually, with access to many buyers and their search patterns, Amazon became a marketplace for goods from many other suppliers. Salesforce.com created a CRM product, and then created an app exchange ecosystem where third-party developers could sell software to existing customers. With respect to their marketplace offerings, *both companies first created demand.*

The health of their chicken-and-egg-defeating strategy was a critical metric:

- For Uber, this meant measuring how much drivers would be making on a commission basis, as well as the inventory and the time it took a driver to pick up a customer. When those metrics were sustainable (with a reasonable margin of error), it was time to switch from the “artificial” market of paid drivers to the “sustainable” two-sided marketplace of commissions.
- For Amazon, this meant measuring the number of retained book buyers who were comfortable with the purchase and delivery process, and then trying out new offerings, such as electronics or kitchenware, that those buyers might purchase.

The first step of a two-sided marketplace—and the first thing to measure—is your ability to create an inventory (supply) or an audience (demand). DuProprio looked for “for sale by owner” signs and classified listings to build its initial set of listings, and the seller’s lawn sign then drove buyer traffic, so its metrics were listings and lawn signs. The metrics you’ll care about first are around the attraction, engagement, and growth of this seed group.

Josh Breinlinger, a venture capitalist at Sigma West who previously ran marketing at labor marketplace oDesk, breaks up the key marketplace metrics into three categories: buyer activity, seller activity, and transactions. “I almost always recommend modeling the buyer side as your primary focus, and then you model supply, more in the sense of total inventory,” he says. “It’s easy to find people that want to make money; it’s much harder to find people that want to spend money.”

Josh cautions that just tracking buyer, seller, and inventory numbers isn’t enough: you have to be sure those numbers relate to the actual activity that’s at the core of your business model. “If you wanted to juice those numbers you could do so quite easily by tweaking algorithms, but you’re not necessarily providing a better experience to users,” he says. “I believe the better focus is on more explicit marketplace activity like bids, messages, listings, or applications.”

Once you’ve got both sides of the market together, your attention (and analytics) will shift to maximizing the proceeds from the market—the number of listings, the quality of buyers and sellers, the percentage of searches for which you have at least one item in inventory, the marketplace-specific metrics Josh mentions, and ultimately, the sales volume and resulting revenue. You’ll also focus on understanding what makes a listing desirable so you can attract more like it. And you’ll start tracking fraud and bad offerings that can undermine the quality of the marketplace and send buyers and sellers away.

Our game console company starts by tracking the growth of buyers within the marketplace, and their interest in sellers' listings. To track buyers, we start by tracking visitors who aren't sellers (see Table 13-1). One useful metric is the ratio of buyers to sellers—a higher number should convince more sellers to list their merchandise.

	Jan	Feb	Mar	Apr	May	Jun
Unique visitors	3,921	5,677	6,501	8,729	10,291	9,025
Returning visitors	2,804	4,331	5,103	6,448	7,463	6,271
Registered visitors	571	928	1,203	3,256	4,004	4,863
Visitor/seller ratio	12.10	13.33	11.57	11.91	12.83	10.45

Table 13-1. Site visitors (potential buyers)

But this data looks a lot like vanity metrics. What we *really* care about are engaged buyers who've made a purchase. Drawing a line in the sand, we decide someone is a buyer if she's made at least one purchase, and that a buyer is engaged if she's searched for something in the last 30 days (see Table 13-2).

	Jan	Feb	Mar	Apr	May	Jun
Buyers (1+ purchase)	412	677	835	1,302	1,988	2,763
Engaged buyers (search in last 30 days)	214	482	552	926	1,429	1,826
Engaged buyer/active seller ratio	1.95	3.09	2.33	4.61	5.67	6.81
Engaged buyer/active listing ratio	1.37	1.17	0.84	1.05	1.34	1.62

Table 13-2. Number of engaged buyers

Next we look at sellers, their growth in the marketplace, and the listings they create (see Table 13-3).

	Jan	Feb	Mar	Apr	May	Jun
Sellers	324	426	562	733	802	864
Listings	372	765	1,180	1,452	1,571	1,912
Average listings/seller	1.15	1.80	2.10	1.98	1.96	2.21

Table 13-3. Growth of sellers and listings

This is a bit simplistic, however: it breaks our rule that good metrics are ratios or rates, and it doesn't distinguish between active and disengaged sellers. A better set of data might dig a bit deeper. We draw some lines in the sand: sellers are disengaged if they haven't added a listing in the last 30 days, and listings are inactive if they don't show up in buyers' search results at least five times a week (see Table 13-4).

	Jan	Feb	Mar	Apr	May	Jun
Active sellers (new listing in last 30 days)	110	156	237	201	252	268
% active sellers	34.0%	36.6%	42.2%	27.4%	31.4%	31.0%
Active listings (five views in last week)	156	413	660	885	1,068	1,128
% active listings	41.9%	54.0%	55.9%	61.0%	68.0%	59.0%

Table 13-4. Number and percent of active sellers and listings

Now that we have some data on buyers and sellers, we need to map out the conversion funnel leading to a purchase. We look at the number of searches, how many of them produce results, and how many of those results lead to a viewing of a detailed listing of the product. We also track the sale, and whether the buyer and seller were satisfied (see Table 13-5).

	Jan	Feb	Mar	Apr	May	Jun
Total searches	18,271	31,021	35,261	64,021	55,372	62,012
Searches with >1 match	9,135	17,061	23,624	48,015	44,853	59,261
Click-through to listings	1,370	2,921	4,476	10,524	15,520	12,448
Total purchase count	71	146	223	562	931	622
Remaining inventory	301	920	1,877	2,767	3,407	4,697
Satisfied transactions	69.00	140.00	161.00	521.00	921.00	590.00
Percent satisfied transactions	97.18%	95.89%	72.20%	92.70%	98.93%	94.86%
Total revenue	\$22,152	\$42,196	\$70,032	\$182,012	\$272,311	\$228,161
Average transaction size	\$312.00	\$289.01	\$314.04	\$323.86	\$292.49	\$366.82

Table 13-5. Sales, satisfaction, and revenue

Finally, we track the quality of the listings and the buyers’ and sellers’ reputations (see Table 13-6).

	Jan	Feb	Mar	Apr	May	Jun
Searches per buyer per day	1.48	1.53	1.41	1.64	0.93	0.75
New listings per day	12.00	22.11	30.87	29.67	20.65	43.00
Average search result count	2.1	3.1	3.4	4.2	5.2	9.1
Flagged listings	12	18	24	54	65	71
Percent flagged listings	3.23%	2.35%	2.03%	3.72%	4.14%	3.71%
Sellers rated below 3/5	4.0%	7.1%	10.0%	8.2%	7.0%	9.1%
Buyers rated below 3/5	1.2%	1.4%	1.8%	2.1%	1.9%	1.6%

Table 13-6. *Quality of listings*

There’s a lot of data to track here, because you’re monitoring both buyer e-commerce funnels and seller content creation, as well as looking for signs of fraud or declining content quality.

Which metrics you focus on will depend on what you’re trying to improve: inventory, conversion rate, search results, content quality, and so on. For example, if you’re not getting enough click-through from search results to individual listings, you can show less information in initial search results to see if that encourages more click-through.

So the metrics you’ll want to watch include:

Buyer and seller growth

The rate at which you’re adding new buyers and sellers, as measured by return visitors.

Inventory growth

The rate at which sellers are adding inventory—such as new listings—as well as completeness of those listings.

Search effectiveness

What buyers are searching for, and whether it matches the inventory you’re building.

Conversion funnels

The conversion rates for items sold, and any segmentation that reveals what helps sell items—such as the professional photographs of a property mentioned in the Airbnb case study in Chapter 1.

Ratings and signs of fraud

The ratings for buyers and sellers, signs of fraud, and tone of the comments.

Pricing metrics

If you have a bidding method in place (as eBay does), then you care whether sellers are setting prices too high or leaving money on the table.

All of the metrics that matter to an e-commerce site matter to a two-sided marketplace. But the metrics listed here focus specifically on the creation of a fluid market with buyers and sellers coming together.

Rate at Which You're Adding Buyers and Sellers

This metric is particularly important in the early stages of the business. If you're competing with others, then your line in the sand is an inventory of sellers that's comparable to that of your competitors, so it's worth a buyer's time to search you. If you're in a relatively unique market, then your line in the sand is enough inventory that buyers' searches are returning one or more valid results.

Track the change in these metrics over periods of time to understand if things are getting better or worse. You're already tracking the sellers and listings, but what you really want to know is how fast those numbers are growing.

This makes it easier to pinpoint changes that are worth investigating. You'll want to track how fast you're adding sellers to the marketplace and whether the rate of addition is growing or slowing. If it's growing, then you may want to focus on onboarding new sellers so they become active and list inventory right away; if it's stalling, then you may want to spend more money to find new sellers or focus on increasing the number of listings per seller as well as the conversion rate of those listings.

Long-term, you can always buy supply, but you can't buy demand. In an attention economy, having an engaged, attentive user base is priceless. It's the reason Walmart can coerce favorable terms from suppliers and that Amazon can build a network of merchants even though it's a seller itself. When it comes to sustainable competitive advantage, *demand beats supply*.

Rate of Inventory Growth

In addition to sellers, you need to track listings they create. Focus on the number of listings per seller and whether that’s growing, as well as the completeness of those listings (are sellers completing the description of their offering?).

A bigger inventory means more searches are likely to yield results. If you start to saturate your marketplace (i.e., if most of the sellers in your market have already become members), then your growth will come from increasing their listings and the effectiveness of those listings.

Buyer Searches

In many two-sided markets, searches are the primary way in which buyers find sellers. You need to track the number of searches that return no results—this is a lost sales opportunity. For example, you might track the change in daily searches, new listings, and result counts, which will show you whether you’re growing the business (see Table 13-7).

	Feb	Mar	Apr	May	Jun
Change in daily searches per buyer	103.3%	92.2%	116.4%	56.6%	80.6%
Change in new listings per day	184.2%	139.6%	96.1%	69.6%	208.3%
Change in average result count per search	147.6%	109.7%	123.5%	123.8%	175.0%

Table 13-7. Buyer searches month over month

In this example, buyers performed fewer daily searches in May and June than beforehand, relatively speaking. The number of listings in May also declined.

You should also look at the search terms themselves. By looking at the most common search terms that yield nothing, you’ll find out what your buyers are after. A dominant search term—say, “Nintendo”—might suggest a category you could add to the site to make navigation easier, or a keyword campaign you could undertake to attract more buyers. You’ll want to know what the most lucrative search terms are, too, because that tells you what kind of seller you should attract to the site.

The ratio of searches to clicked listings is also an important step in your conversion funnel.

Conversion Rates and Segmentation

The conversion funnel will have several stages, starting with the number of searches done by visitors. You should also measure the number of *satisfied* transactions, because a spike in transactions where one party is unsatisfied suggests that the site is focused on short-term gain (more sales) for long-term pain (a bad reputation, demands for refunds, and so on). See Table 13-8.

	May	Funnel
Total searches	55,372	100.00%
Searches with >1 match	44,853	81.00%
Click-through to listings	15,520	28.03%
Total purchase count	931	1.68%
Satisfied transactions	921	1.66%

Table 13-8. Measuring conversions in a marketplace

Buyer and Seller Ratings

Shared marketplaces are often regulated by the users themselves—users rate one another based on their experience with a transaction. The easiest way to implement this system is to let users flag something that’s wrong, or that violates the terms of service. Users can also rank one another, and sellers work hard to earn a good reputation when the ratings system works well.

Percent of Flagged Listings

You’ll want to track the percentage of listings that are flagged, and whether this number is increasing or decreasing. A sharp increase in the percentage of listings your users are flagging indicates fraud. See Table 13-9.

	Jan	Feb	Mar	Apr	May	Jun
Percent of listings flagged	3.23%	2.35%	2.03%	3.72%	4.14%	3.71%
Change in percent flagged listings		72.9%	86.4%	182.9%	111.3%	89.7%
Change in sellers rated below 3/5		177.5%	140.8%	82.0%	85.4%	130.0%
Change in buyers rated below 3/5		116.7%	128.6%	116.7%	90.5%	84.2%

Table 13-9. Flagged listings

Similarly, a rise in poor ratings shows a problem with expectations, and may indicate that sellers aren't delivering or buyers aren't paying. In every case, you'll have to start with these metrics, then investigate individually to see if there's a technical problem, a malicious user, or something else behind the change.

Visualizing a Two-Sided Marketplace

Figure 13-1 illustrates a user's flow through a two-sided marketplace, along with the key metrics at each stage.

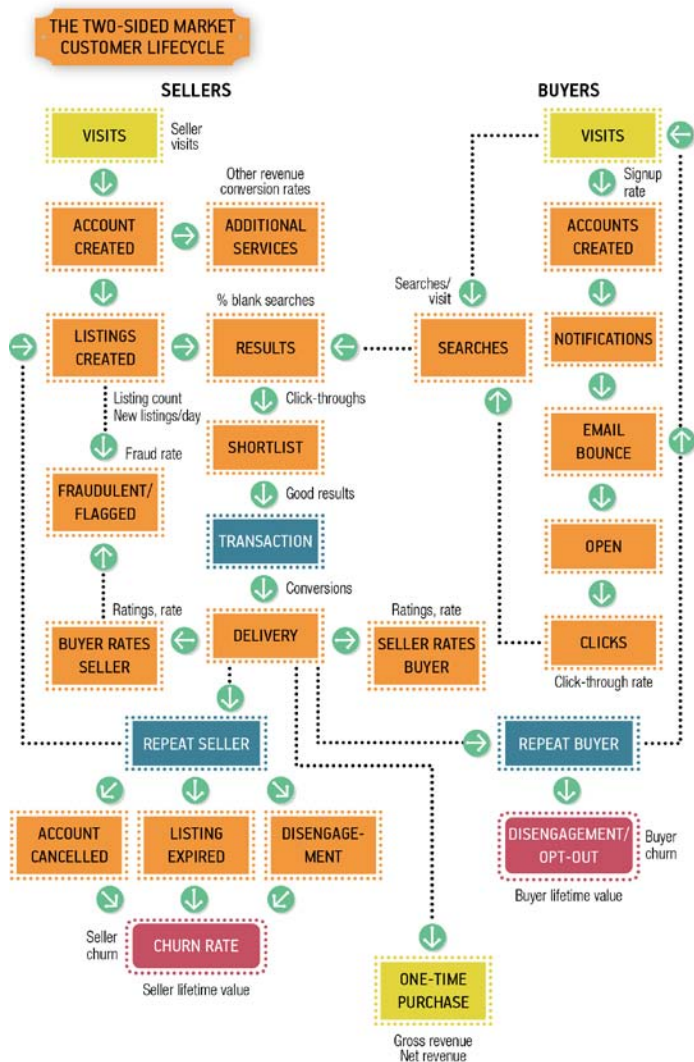


Figure 13-1. Two-sided marketplaces—twice the metrics, twice the fun

Wrinkles: Chicken and Egg, Fraud, Keeping the Transaction, and Auctions

In the early days of the Web, pundits predicted an open, utopian world of frictionless markets that were transparent and efficient. But as Internet giants like Google, Amazon, and Facebook have shown, parts of the Web are dystopian. Two-sided marketplaces are subject to strong network effects—the more inventory they have to offer, the more useful they become. A marketplace with no inventory, on the other hand, is useless.

Successful two-sided marketplaces find a way to artificially populate either the buyer or the seller side early on. As a particular niche matures, this network effect means there will be a few dominant players—as is the case with Airbnb, VRBO, and a few others in the rental property space.

Fraud and trust are the other big issues for such marketplaces. You don't want to assume responsibility for the delivery of goods or services within your marketplace, but you need to ensure that there are reliable reputation systems. Buyer and seller ratings are one approach to this, but there are other ways. Some dating sites offer guarantees (for example, that they will prosecute if a person turns out to be married).

One more major issue is keeping the transaction within the network. In the case of a sailboat or house marketplace, the transaction may be tens or even hundreds of thousands of dollars. That's not really suitable for a PayPal transaction, and it's hard to stop "leakage"—buyers and sellers find one another through your marketplace, and then conclude their business without you getting a transaction fee.

There are a number of ways to overcome this—all of which you should test to see if they work for your product and market. For example, you might:

- Refer users to an outside agent to conclude the transaction (e.g., a realtor) and monetize the referral.
- Charge a fee (instead of a percentage) proportional to the value of the item the seller is listing.
- Monetize something else about the market, such as in-site advertising, shipping services, or favorable placement.
- Make it impossible for the two parties to connect or find each other's identity until after the transaction is confirmed (as discount travel site Hotwire does).
- Offer value-added services (such as purchase insurance or escrow) that encourage participants to keep you in the deal.

Finally, there are auction marketplaces such as eBay where the price of an item isn't fixed. The seller may set the minimum price, as well as a "Buy now" value, but the final price is what the market is willing to pay. If this is your model, you'll need to analyze how many sales failed to receive a bid (indicating overpricing), how many sold for the "Buy now" price (indicating underpricing), and the duration and outcome of auctions. You might use this information to improve the prices your sellers set—and your resulting revenues.

Key Takeaways

- Two-sided markets come in all shapes and sizes.
- Early on, the big challenge is solving the "chicken and egg" problem of finding enough buyers and sellers. It's usually good to focus on the people who have money to spend first.
- Since sellers are inventory, you need to track the growth of that inventory and how well it fits what buyers are looking for.
- While many marketplaces take a percentage of transactions, you may be able to make money in other ways, by helping sellers promote their products or charging a listing fee.

Two-sided marketplaces are a variant of traditional e-commerce sites. We've focused on what makes marketplaces unique in this chapter, but if you want to learn more about e-commerce and the metrics that drive that business model, jump back to Chapter 8. If, on the other hand, you want to learn how the stage of your business drives the metrics you need to watch, continue to Chapter 14.

What Stage Are You At?

You can't just start measuring everything at once. You have to measure your assumptions in the right order. To do that, you need to know what stage you're at.

Our Lean Analytics stages suggest an order to the metrics you should focus on. The stages won't apply perfectly to everyone. We'll probably get yelled at for being so prescriptive—in fact, we already have, as we've tested the material for the book online and in events. That's OK; we have thick skins.

In a startup, your business *model*—and proof that your assumptions are reasonably accurate—is far more important than your business *plan*. Business plans are for bankers; business models are for founders. Deciding what business you're in is usually quite easy. Deciding on the *stage* you're at is complicated. This is where founders tend to lie to themselves. They believe they're further along than they really are.

The reality is that every startup goes through stages, beginning with problem discovery, then building something, then finding out if what was built is good enough, then spreading the word and collecting money. These stages—Empathy, Stickiness, Virality, Revenue, and Scale—closely mirror what other Lean Startup advocates advise.

1. First, you need *empathy*. You need to get inside your target market's head and be sure you're solving a problem people care about in a way someone will pay for. That means getting out of the building, interviewing people, and running surveys.

2. Second, you need *stickiness*, which comes from a good product. You need to find out if you can build a solution to the problem you've discovered. There's no point in promoting something awful if your visitors will bounce right off it in disgust. Companies like Color that attempted to scale prematurely, without having proven stickiness, haven't fared well.
3. Third, you need *virality*. Once you've got a product or service that's sticky, it's time to use word of mouth. That way, you'll test out your acquisition and onboarding processes on new visitors who are motivated to try you, because you have an implied endorsement from an existing user. Virality is also a force multiplier for paid promotion, so you want to get it right before you start spending money on customer acquisition through inorganic methods like advertising.
4. Fourth, you need *revenue*. You'll want to monetize things at this point. That doesn't mean you haven't already been charging—for many businesses, even the first customer has to pay. It just means that earlier on, you're less focused on revenue than on growth. You're giving away free trials, free drinks, or free copies. Now you're focused on maximizing and optimizing revenue.
5. Fifth, you need *scale*. With revenues coming in, it's time to move from growing your business to growing your market. You need to acquire more customers from new verticals and geographies. You can invest in channels and distribution to help grow your user base, since direct interaction with individual customers is less critical—you're past product/market fit and you're analyzing things quantitatively.

So, as we shared in Chapter 5, we suggest these five Lean Analytics stages, and we believe you should go through them in the order shown in Figure 14-1, unless you have a really good reason to do otherwise.

While many of the examples we've looked at are technology companies—and many of those are B2C (business to consumer) companies—these five stages apply equally well to a restaurant as they do to an enterprise software company.

LEAN ANALYTICS STAGE	RATIONALE
EMPATHY	Identifying a real problem and a real solution is the cheapest thing to do (since it costs only a cup of coffee). It also addresses the riskiest question: will anyone care? It comes first.
STICKINESS	Will the dogs eat the dog food? Make your mistakes with a small, friendly audience you can love and nurture before throwing the unwashed masses at it.
VIRALITY	Sharing helps grow, but also verifies that what you've made is good. Word of mouth is endorsement. And virality is a "force multiplier" for paid customer acquisition.
REVENUE	Will people open their pocketbooks? And can you charge them enough to fund your ongoing operations, plus your artificial acquisition of users?
SCALE	You need channels to amortize the cost of sales and distribution. You need an ecosystem to cross the "hole in the middle" from niche player to big company.

Figure 14-1. Why we put the five stages of Lean Analytics in that order

Consider a restaurant:

1. **Empathy:** Before opening, the owner first learns about the diners in the area, their desires, what foods aren't available, and trends in eating.
2. **Stickiness:** Then he develops a menu and tests it out with consumers, making frequent adjustments until tables are full and patrons return regularly. He's giving things away, testing things, and asking diners what they think. Costs are high because of variance and uncertain inventory.
3. **Virality:** He starts loyalty programs to bring frequent diners back, or to encourage people to share with their friends. He engages on Yelp and Foursquare.
4. **Revenue:** With virality kicked off, he works on margins—fewer free meals, tighter controls on costs, and more standardization.
5. **Scale:** Finally, knowing he can run a profitable business, he pours some of the revenues into marketing and promotion. He reaches out to food reviewers, travel magazines, and radio stations. He launches a second restaurant, or a franchise based on the initial one.

Now consider a company selling software to large enterprises:

1. **Empathy:** The founder finds an unmet need because she has a background in a particular industry and has worked with existing solutions that are being disrupted.
2. **Stickiness:** She meets with an initial group of prospects and signs contracts that look more like consulting agreements, which she uses to build an initial product. She's careful not to commit to exclusivity, and tries to steer customers toward standardized solutions, charging heavily for custom features. Her engineers handle customer support directly, rather than having an "insulating layer" of support staff in this early stage, so they have to confront the warts and wrinkles of what they've created.
3. **Virality:** Product in hand, she asks for references from satisfied customers and uses those as testimonials. She starts direct sales and grows the customer base. She launches a user group and starts to automate support. She releases an API, encouraging third-party development and scaling potential market size without direct development.
4. **Revenue:** She focuses on growing the pipeline, sales margins, and revenues while controlling costs. Tasks are automated, outsourced, or offshored. Feature enhancements are scored based on anticipated payoff and development cost. Recurring license and support revenue becomes an increasingly large component of overall revenues.
5. **Scale:** She signs deals with large distributors, and works with global consulting firms to have them deploy and integrate her tool. She attends trade shows to collect leads, carefully measuring cost of acquisition against close rate and lead value.

We'll continue to use these five stages and correlate them to other frameworks as we did in Chapter 5. We'll also outline the individual gates that you need to pass through as you move from one stage to the next.*

We care a lot about company stage because the metrics you focus on will be significantly impacted by the stage of your business. Premature focus or optimization of things that don't really matter is a surefire way of killing your startup. So let's dig into the five Lean Analytics stages.

* It's worth pointing out that Lean founders consider payment, virality, and stickiness three Engines of Growth, and that a company can pivot from one to the next. We prefer to think of them as three things to optimize: a good startup has payment (and investment in customer acquisition), stickiness (and recurring revenue), and virality (and the resulting word of mouth). You can focus on one at a time, but we think you should build all three—and their related metrics—into your startup as you grow.

EXERCISE | Pick the Stage That You're At

What stage do you think you're at? Write it down. After reading the following chapters on the five Lean Analytics stages, see if your answer changes. It will likely require more detail as well—zeroing in on a specific aspect of a stage that you're focused on (for example, problem validation or solution validation in the Empathy stage). You may be overlapping between stages, too, so read them all before deciding.

Stage One: Empathy

At the outset, you're spending your time discovering what's important to people and being empathetic to their problems. You're searching through listening. You're digging for opportunity through caring about others. Right now, your job isn't to prove you're smart, or that you've found a solution.

Your job is to *get inside someone else's head*.

That means discovering and validating a problem and then finding out whether your proposed solution to that problem is likely to work.

Metrics for the Empathy Stage

In the Empathy stage, your focus is on gathering qualitative feedback, primarily through problem and solution interviews. Your goal is to find a problem worth solving and a solution that's sufficiently good to garner early traction. You're collecting this information by *getting out of the building*. If you haven't gotten out of the building enough—and spoken to at least 15 people at each interviewing stage—you should be very concerned about rushing ahead.

Early on, you'll keep copious notes. Later, you might score the interviews to keep track of which needs and solutions were of the greatest interest, because this will tell you what features need to be in your minimum viable product (MVP).

This Is the Best Idea I've Ever Had! (or, How to Discover Problems Worth Solving)

Entrepreneurs are always coming up with ideas. While some people say “ideas are easy,” that’s not entirely true. Coming up with an idea is hard. Coming up with a good idea is harder. Coming up with an idea that you go out and validate to the point where it makes sense to build something is really, really hard.

Problem (or idea) discovery often starts with listening. After all, people love to complain about their problems. But take their complaining with a grain of salt. You need to listen actively, almost aggressively, for the nugget of truth or the underlying pattern. Big, lucrative startups are often the result of wildly audacious solutions to problems people didn’t realize they had.

Discovery is the muse that launches startups.

In some cases, you won’t need to discover a problem. It will be the reason you founded a startup in the first place. This is particularly true for enterprise-focused initiatives or startup efforts that happen within a willing host company. As an intrapreneur, you may have noticed a pattern in customer support issues that suggests the need for a new product. If you’re selling to enterprises, maybe you were an end user who realized something was missing, or a former employee of a vendor who saw an opportunity.

Your idea is simply a starting point. You should let it marinate awhile before jumping into it. We’re huge believers in doing things quickly, but there’s a difference between focused speed in a smart direction and being ridiculously hasty. Your first instinct will be to talk to your friends. This isn’t a genuine or measurable part of Lean Startup, but it’s not a bad first step. Ideally, you’ve got a group of friends, or trusted advisors, who are in and around the relevant space of interest, from whom you can get a quick reality check.

Your trusted friends and advisors will give you their gut reaction (see—we don’t hate guts at all!), and if they’re not pandering to you or trying to avoid hurting your feelings, then you’ll get at least semi-honest feedback. You may also get some insight that you hadn’t thought of: information about competitors, target markets, different takes on the idea, and so on.

This quick “sniff test” is an excellent investment for the first few days after you get an idea, before committing any formal work to it. If the idea passes the sniff test, it’s time to apply the Lean Startup process.

Finding a Problem to Fix (or, How to Validate a Problem)

The goal of the first Lean stage is to decide whether the problem is *painful enough* for *enough people* and to learn *how* they are currently trying to solve it. Let's break down what that means:

The problem is painful enough

People are full of inertia. You want them to act, and you want them to do so in a way that helps your business. This requires enough discomfort with their situation that they actually do what you want—signing up, paying your price, etc.

Enough people care

Solving a problem for one person is called consulting. You need an addressable market. Marketers want audiences that are *homogeneous within* (that is, members of the segment have things in common to which you can appeal) and *heterogeneous between* (that is, you can segment and target each market segment in a focused manner with a tailored message).

They're already trying to solve it

If the problem is real and known, people are dealing with it somehow. Maybe they're doing something manually, because they don't have a better way. The current solution, whatever it is, will be your biggest competitor at first, because it's the path of least resistance for people.

Note that in some cases, your market won't know it has a problem. Before the Walkman, the minivan, or the tablet computer, people didn't know they had a need—indeed, Apple's ill-fated Newton a decade before the iPad showed that the need didn't exist. In this case, rather than just testing for a problem people know they have, you're also interested in *what it takes to make them aware of the problem*. If you're going to have to “plow the snow” in your market, you want to know how much effort it will be so you can factor that into your business models.

You need to validate each of these (and a few more things too) before moving to the next stage. And analytics plays a key role in doing so.

Initially, as we've pointed out, you'll use qualitative metrics to measure whether or not the problem you've identified is worth pursuing. You start this process by conducting problem interviews with prospective customers.

We suggest that you speak with 15 prospective customers to start. After the first handful of interviews, you'll likely see patterns emerging already. Don't stop talking to people. Once you get to 15 interviews, you should have the validation (or invalidation) that you need to help clarify the next steps.

If you can't find 15 people to talk to, well, imagine how hard it's going to be to sell to them. So suck it up and get out of the office. Otherwise, you're wasting time and money building something nobody wants.

While the data you're collecting at this stage is qualitative, it has to be material enough so that you can honestly say, "Yes, this problem is painful enough that I should go ahead and build a solution." One customer doesn't make a market. You can't speak with a few people, get generic positive feedback, and decide it's worth jumping in.

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Signs You've Found a Problem Worth Tackling

The key to qualitative data is patterns and pattern recognition. Here are a few positive patterns to look out for when interviewing people:

- They want to pay you right away.
- They're actively trying to (or have tried to) solve the problem in question.
- They talk a lot and ask a lot of questions demonstrating a passion for the problem.
- They lean forward and are animated (positive body language).

Here are a few negative patterns to look out for:

- They're distracted.
- They talk a lot, but it's not about the problem or the issues at hand (they're rambling).
- Their shoulders are slumped or they're slouching in their chairs (negative body language).

At the end of the problem interviews, it's time for a gut check. Ask yourself: "am I prepared to spend the next five years of my life doing nothing else but solving the problem in question?"

Running Lean and How to Conduct a Good Interview

Ash Maurya is one of the leaders in the Lean Startup movement. He's experimented and documented Lean Startup practices for several years with his own startups, and he wrote a great book called *Running Lean* (O'Reilly). It's a good complement to this book.

Ash describes a prescriptive, systematic approach for interviewing people during the early stages of the Lean Startup process.

For starters, you need to conduct problem interviews. You decouple the solution (which we know you're excited about!) from the problem, and focus on the problem alone. The goal is to find a problem worth solving. And remember, customers are tired of solutions—they get pitched continually on magical doohickeys that will make their lives easier. But most of the time, the people pitching don't understand the customers' real problems.

Here are some tips from Ash and *Running Lean* for conducting good interviews:

- **Aim for face-to-face interviews.** You not only want to hear what people are saying, you also want to see how they're saying it. People are generally much less distracted when meeting face-to-face, so you'll get a higher quality of response.
- **Pick a neutral location.** If you go to a subject's office, it's going to feel more like a sales pitch. Find a coffee shop or something casual.
- **Avoid recording interviews.** Ash notes that in his experience, subjects get more self-conscious if the interview is being recorded, and the quality of interviews subsequently drops.
- **Make sure you have a script.** While you may adjust the script a bit over time, you're not tweaking it constantly in order to "get the answers you want" or rig anything in your favor. You have to stay honest throughout the process.

The script is probably the hardest thing to do well. Early on, you may not even be sure what questions to ask. In fact, that's why surveys don't work at an early stage—you just don't know what to ask in order to collect meaningful information. But a script will give you enough consistency from interview to interview that you can compare notes.

Most of the problem interview is fairly open-ended. You want to give subjects the opportunity to tell you whatever they want to, and you want them to do so in a comfortable free-form manner.

In *Running Lean*, Ash provides a very good breakdown of interview scripts. We've summarized the problem interview script as follows:

- **Briefly set the stage** for how the interview works. This is the point where you tell the interviewee what you're going to tell (or ask) her. Highlight the goals of the interview to put the interviewee in the right frame of mind.
- **Test the customer segment** by collecting demographics. Ask the subject some basic questions to learn more about her and understand what market segment she represents. These questions depend a great deal on the types of people you speak to. Ultimately, you want to learn about their business or their lifestyle (in the context of the problems you're proposing to solve), and learn more about their role.
- **Set the problem context** by telling a story. Connect with the subject by walking her through how you identified the problems you're hoping to solve, and why you think these problems matter. If you're scratching your own itch, this will be a lot easier. If you don't understand the problems clearly, or you don't have good hypotheses for the problems you're looking to solve, it's going to show at this point.
- **Test the problem** by getting the subject to rank the problems. Restate the problems you've described and ask the subject to rank them in order of importance. Don't dig too deeply, but make sure to ask her if there are other related problems that you didn't touch on.
- **Test the solution.** Explore the subject's worldview. Hand things over to the customer and listen. Go through each problem—in the order the subject ranked them—and ask the subject how she solves it today. There's no more script. Just let the subject talk. This is the point in the interview when you can really do a qualitative assessment of whether or not you've found problems worth solving. It may go well, with subjects begging you to solve the problem, or you might get a resounding "meh," in which case there's a clear disconnect between your business and the real world.

- **Ask for something** now that you're done. You don't want to discuss your solution at length here, because it will feel too much like a sales call, but you should use a high-level pitch to keep the subject excited. Ideally, you want her to agree to do a solution interview with you when you're ready with something to show—these initial subjects can become your first customers—and you want her to refer other people like her so you can do more interviews.

As you can tell, there's a lot that goes into conducting a good interview. You won't be great at it the first time, but that's OK. Hopefully some of what we've covered here and other resources will give you the tools you need. Get a good script in place, practice it, and get out there as quickly as you can. After a handful of interviews, you'll be very comfortable with the process and you'll start seeing trends and collecting information that's incredibly valuable. You'll also be immeasurably better at stating the problem clearly and succinctly, and you'll collect anecdotes that will help with blogger outreach, investor discussions, and marketing collateral.

Qualitative metrics are all about trends. You're trying to tease out the truth by identifying patterns in people's feedback. You have to be an exceptionally good listener, at once empathetic and dispassionate. You have to be a great detective, chasing the “red threads” of the underlying narrative, the commonalities between multiple interviewees that suggest the right direction. Ultimately, those patterns become the things you test quantitatively, at scale. You're looking for hypotheses.

The reality of qualitative metrics is that they turn wild hunches—your gut instinct, that nagging feeling in the back of your mind—into educated guesses you can run with. Unfortunately, because they're subjective and gathered interactively, qualitative metrics are the ones that are easiest to fake.

While *quantitative* metrics can be wrong, they don't lie. You might be collecting the wrong numbers, making statistical errors, or misinterpreting the results, but the raw data itself is right. Qualitative metrics are notoriously easy for you to bias. If you're not ruthlessly honest, you'll hear what you want to hear in interviews. We love to believe what we already believe—and our subjects love to agree with us.

PATTERN | How to Avoid Leading the Witness

We're a weak, shallow species. Human beings tend to tell you what they think you want to hear. We go along with the herd and side with the majority. This has disastrous effects on the results you get from respondents: you don't want to make something nobody wants, but everybody lies about wanting it. What's a founder to do?

You can't change people's fundamental nature. Response bias is a well-understood type of cognitive bias, exploited by political campaigners to get the answer they want by leading the witness (this is known as *push polling*).

You can, however, do four things: don't tip your hand, make the question real, keep digging, and look for other clues.

Don't Tip Your Hand

We're surprisingly good at figuring out what someone else wants from us. The people you interview will do everything they can, at a subconscious level, to guess what you want them to say. They'll pick up on a variety of cues.

- **Biased wording**, such as “do you agree that...” is one such cue. This leads to an effect called *acquiescence* bias, where a respondent will try to agree with the positive statement. You can get around this by asking people the *opposite* of what you're hoping they'll say—if they are willing to disagree with you in order to express their need for a particular solution, that's a stronger signal that you've found a problem worth solving.
- This is one reason why, early in the customer development process, open-ended questions are useful: they color the answers less and give the respondent a chance to ramble.
- **Preconceptions** are another strong influencer. If the subject knows things about you, he'll likely go along with them. For example, he'll answer more positively to questions on the need for environmental protection if he knows you're a vegetarian. The fewer things he knows about you, the less he'll be able to skew things. Anonymity can be a useful asset here; this is a big reason to keep your mouth shut and let him talk, and to work from a standardized script.
- Other social cues come from **appearance**. Everything in your demeanor gives the respondent clues about how to answer you. These days, it's probably hard for you to hide details about yourself,

since we live fairly transparently online and you may have met your respondents through social networks. But you'll get better data if you dress blandly and act in a manner that doesn't take strong positions or give off signals.

Make the Questions Real

One way to get the real answer is to make the person uncomfortable.

*People only get really interesting when they start
to rattle the bars of their cages.*

Alain de Botton, author and philosopher

Next time you're interviewing someone, instead of asking "Would you use this product?" (and getting a meaningless, but well-intentioned, "yes"), ask for a \$100 pre-order payment. You'll likely get a resounding "no." And that's where the interesting stuff starts.

Asking someone for money will definitely rattle her cage. Will it make both of you uncomfortable? Absolutely. Should you care? Not if you're interested in building something people will actually pay for.

The more concrete you can make the question, the more real the answer. Get subjects to purchase, rather than indicating preference. Ask them to open their wallets. Get the names of five friends they're sure will use the product, and request introductions. Suddenly, they're invested. There's a real cost to acting on your behalf. This discomfort will quickly wash away the need to be liked, and will show you how people really feel.

One other trick to overcome a subject's desire to please an interviewer is to ask her how her friends would act. Asking "Do you smoke pot?" might make someone answer untruthfully to avoid moral criticism, but asking "What percentage of your friends smoke pot?" is likely to get an accurate answer that still reflects the person's perception of the overall population.

Keep Digging

A great trick for customer development interviews is to ask "why?" three times. It might make you sound like a two-year-old, but it works. Ask a question; wait for the person to finish. Pause for three seconds (which signals to her that you're listening, and also makes sure she was really done). Then ask why.

By asking “why?” several times, you force a respondent to explain the reasoning behind a statement. Often, the reasoning will be inconsistent or contradictory. That’s good—it means you’ve identified the gap between *what people say they will do* and *what they will actually do*.

As an entrepreneur, you care about the latter; it’s hard to convince people to act against their inner, moral compasses. “Anyone who values truth,” says Jonathan Haidt, author of *The Righteous Mind* (Pantheon), “should stop worshipping reason.” The reasoning of your interview subjects is far less interesting than their true beliefs and motivations.

You can also take a cue from interrogators and leave lingering, uncomfortable silences in the interview—your subject is likely to fill that empty air with useful, relevant insights or colorful anecdotes that can reveal a lot about her problems and needs.

Look for Other Clues

Much of what people say isn’t verbal. While the amount of nonverbal communication has been widely overstated in popular research, body language often conveys feelings and emotions more than words do. Nervous tics and “tells” can reveal when someone is uncomfortable with a statement, or looking to another person for authority, for example.

When you’re interviewing someone, you need to be directly engaged with that person. Have a colleague tag along and take notes with you, and ask him to watch for nonverbal signals as well. This will help you build a bond with the subject and focus on her answers, and still capture important subliminal messages.

And never forget to ask the “Columbo” question. Like Peter Falk’s TV detective, save one disarming, unexpected question for the very end, after you’ve said your goodbyes. This will often catch people off guard, and can be used to confirm or repudiate something significant they’ve said in the interview.

Convergent and Divergent Problem Interviews

As we wrote this book, we tested out several ideas on entrepreneurs and blog readers. One of the more contentious ideas we discussed was that of scoring problem validation interviews. Several readers felt that this was a good idea, allowing them to understand how well their discovery of needs was proceeding and to rate the demand for a solution. Others protested,

sometimes vociferously: scoring was a bad idea, because it interfered with the open, speculative nature of this stage.

We'll share our scoring framework later in the book. First, however, we'd like to propose a compromise: *problem validation can actually happen in two distinct stages.*

While the goal of a problem interview is always the same—decide if you have enough information and confidence to move to the next stage—the tactics to achieve this do vary.

In Ash Maurya's framework from earlier in this chapter, he suggests telling a story first to create context around the problem. Then he suggests introducing more specific problems and asking interviewees to rank them. This is a *convergent* approach: it's directed, focused, and intended to quantify the urgency and prevalence of the problems, so you can compare the many issues you've identified. In a convergent problem interview, you're zeroing in on specifics—and while you want interviewees to speak freely, and the interviews aren't heavily structured—you're not on a fishing expedition with no idea what you're fishing for.

A convergent problem interview gives you a clear course of action at the risk of focusing too narrowly on the problems that you think matter, rather than freeing interviewees to identify other problems that may be more important to them. For example, you might steer subjects back to your line of questioning at the expense of having them reveal an unexpected adjacent market or need.

On the other hand, a *divergent* problem interview is much more speculative, intended to broaden your search for something useful you might go build. In this type of problem interview, you're discussing a big problem space (healthcare, task management, transportation, booking a vacation, etc.) with interviewees, and letting them tell you what problems they have. You're not suggesting problems and asking them to rank them. You probably have a problem or two that you're looking to identify, and you'll measure the success of the interviews, in part, by how often interviewees mention those problems (without you having done so first).

The risk with a divergent problem interview is that you venture too broadly on too many issues and never get interviewees to focus. Divergent problem interviews run the risk of giving you too many problems, or not enough similar problems, and no clarity on what to do next.

It takes practice to strike the right balance when doing interviews. On the one hand, you want to give interviewees the opportunity to tell you what they want, but you have to be ready to focus them when you think you've

found something worthwhile. At the same time, you shouldn't hammer away at the problems you're presenting if they're not resonating.

If you're just starting out, and really focused on an exploratory exercise, then try a divergent problem interview. Scoring in this case is less relevant. Collect initial feedback and see how many of the problems people freely described to you match up. If that goes well, you can move to convergent problem interviews with other people and see if the problems resonate at a larger scale.

How Do I Know If the Problem Is Really Painful Enough?

While the data you've collected to this point is qualitative, there are ways of helping you quantify that data to make an informed decision on whether you want to move forward or not. Ultimately, the One Metric That Matters here is *pain*—specifically, your interviewees' pain as it pertains to the problems you've shared with them. So how can you measure pain?

A simple approach is to score your problem interviews. This is not perfectly scientific; your scoring will be somewhat arbitrary, but if you have someone assisting you during the interviews and taking good notes it should be possible to score things consistently and get value out of this exercise.

There are a few criteria you can score against based on the questions you've asked in a convergent problem interview. Each answer has a weight; by adding the results up, you'll have a sense of where you stand.

After completing each interview, ask yourself the following questions.

1. Did the interviewee successfully rank the problems you presented?		
Yes	Sort of	No
The interviewee ranked the problems with strong interest (irrespective of the ranking).	He couldn't decide which problem was really painful, but he was still really interested in the problems.	He struggled with this, or he spent more time talking about other problems he has.
10 points	5 points	0 points

Even in a convergent problem interview where you've focused on a specific set of problems, the interview is open-ended enough to allow interviewees to discuss other issues. That's completely fine, and is extremely important. There's nothing that says the problems you've presented are the right ones—that's precisely what you're trying to measure and justify. So stay open-minded throughout the process.

For the purposes of scoring the interview and measuring pain, a bad score means the interview is a failure—the interviewee’s pain with the problems you’re considering isn’t substantial enough if she spends all her time talking about other problems she has. A failed interview is OK; it may lead you to something even more interesting and save you a lot of heartache.

2. Is the interviewee actively trying to solve the problems, or has he done so in the past?		
Yes	Sort of	No
He’s trying to solve the problem with Excel and fax machines. You may have struck gold.	He spends a bit of time fixing the problem, but just considers it the price of doing his job. He’s not trying to fix it.	He doesn’t really spend time tackling the problem, and is OK with the status quo. It’s not a big problem.
10 points	5 points	0 points

The more effort the interviewee has put into trying to solve the problems you’re discussing, the better.

3. Was the interviewee engaged and focused throughout the interview?		
Yes	Sort of	No
He was hanging on your every word, finishing your sentences, and ignoring his smartphone.	He was interested, but showed distraction or didn’t contribute comments unless you actively solicited him.	He tuned out, looked at his phone, cut the meeting short, or generally seemed entirely detached—like he was doing you a favor by meeting with you.
8 points	4 points	0 points

Ideally, your interviewees were completely engaged in the process: listening, talking (being animated is a good thing), leaning forward, and so on. After enough interviews you’ll know the difference between someone who’s focused and engaged, and someone who is not.

The point totals for this question are lower than the previous two. For one, engagement in an interview is harder to measure; it’s more subjective than the other questions. We also don’t want to weigh engagement in the interview as heavily—it’s just not as important. Someone may seem somewhat disengaged but has spent the last five years trying to solve the problems you’re discussing. That’s someone with a lot of pain . . . maybe he’s just easily distracted.

4. Did the interviewee agree to a follow-up meeting/interview (where you'll present your solution)?		
Yes, without being asked to	Yes, when you asked him to	No
He's demanding the solution "yesterday."	He's OK with scheduling another meeting, but suddenly his calendar is booked for the next month or so.	You both realize there's no point showing him anything in terms of a solution.
8 points	4 points	0 points

The goal of the problem interview is to discover a problem painful enough that you know people want it solved. And ideally, the people you're speaking to are begging you for the solution. The next step in the process is the solution interview, so if you get there with people that's a good sign.

5. Did the interviewee offer to refer others to you for interviews?		
Yes, without being asked to	Yes, when you asked him to	No
He actively suggested people you should talk to without being asked.	He suggested others at the end, in response to your question.	He couldn't recommend people you should speak with.
4 points	2 points	0 points (and ask yourself some hard questions about whether you can reach the market at scale)

At the end of every interview, you should be asking for referrals to other interviewees. There's a good chance the people your subjects recommend are similar in demographics and share the same problems.

Perhaps more importantly at this stage, you want to see if the subjects are willing to help out further by referring people in their network. This is a clear indicator that they don't feel sheepish about introducing you, and that they think you'll make them look smarter. If they found you annoying, they likely won't suggest others you might speak with.

6. Did the interviewee offer to pay you immediately for the solution?		
Yes, without being asked to	Yes, when you asked him to	No
He offered to pay you for the product without being asked, and named a price.	He offered to pay you for the product.	He didn't offer to buy and use it.
3 points	1 points	0 points (and ask yourself some hard questions about whether you can reach the market at scale).

Although having someone offer you money is more likely during the solution interviews (when you're actually walking through the solution with people), this is still a good "gut check" moment. And certainly it's a bonus if people are reaching for their wallets.

Calculating the Scores

A score of 31 or higher is a good score. Anything under is not. Try scoring all the interviews, and see how many have a good score. This is a decent indication of whether you're onto something or not with the problems you want to solve. Then ask yourself what makes the good-score interviews different from the bad-score ones. Maybe you've identified a market segment, maybe you have better results when you dress well, maybe you shouldn't do interviews in a coffee shop. *Everything is an experiment you can learn from.*

You can also sum up the rankings for the problems that you presented. If you presented three problems, which one had the most first-place rankings? That's where you'll want to dig in further and start proposing solutions (during solution interviews).

The best-case scenario is very high interview scores within a subsection of interviewees where those interviewees all had the same (or very similar) rankings of the problems. That should give you *more confidence* that you've found the right problem and the right market.

Cloud9 IDE Interviews Existing Customers

Cloud9 IDE is a cloud-based integrated development environment (IDE) that enables web and mobile developers to work together and collaborate in remote teams anywhere, anytime. The platform is primarily for JavaScript and Node.js applications, but it's expanding to support other languages as well. The company has raised Series A financing from Accel and Atlassian.

Although the Cloud9 IDE team is well past the initial problem interview stage, they regularly speak with customers and engage in systematic customer development. Product Manager Ivar Pruijn says, "We're close to product/market fit, and it helps us a great deal to speak with customers, understanding if we're meeting their needs and how they're using our product."

Ivar took the scoring framework outlined previously and modified some of the questions for the types of interviews he was doing. "Since we're now speaking with customers using our product, we asked slightly different questions, but we scored them just the same," he says. The first two questions that Ivar asked himself after conducting an interview were:

1. Did the interviewee mention problems in his/her workflow that our product solves or will solve soon?
2. Is the interviewee actively trying to solve the problems our product solves/will solve soon, or has he/she done so in the past?

"With these questions, we're trying to determine how well we're solving problems for actual customers. If many of the scores would have been low, we would have known something was wrong," he says.

Happily, most of the interview scores were good, but Ivar was able to dig deeper and learn more. "I was able to identify the customer types to focus on for product improvements. I noticed that two specific customer segments scored the highest on the interviews, especially the first two scoring criteria about meeting their needs and solving their problems."

After scoring the initial interviews, Ivar then verified the results and the scoring in two ways. First, he interviewed some of the company's top active users, gaining an in-depth knowledge of how they work. Second, he analyzed the data warehouse, which has information on how the product is being used. Both of these confirmed his initial findings: two

specific segments of customers were getting significantly more value from the product. “Interestingly, both of these customer groups weren’t the initial ones we were going after,” he says. “So now we know where we can invest more of our time and energy.”

In this case, open-ended discussions followed by scoring—even when the company was beyond the initial Empathy stage—revealed a market segment that had better stickiness and was ripe for rapid growth. What’s more, Ivar says that scoring the interview questions helped him improve his interviewing over time, focusing on results that could be acted upon.

Summary

- Cloud9 IDE decided to run scored customer interviews even though the company was well past the Empathy stage.
- The interviews showed that customers were happy, but also revealed two specific customer segments that derived higher value from the product.
- Using this insight, the company compared analytics data and verified that these groups were indeed using the product differently, which is now driving the prioritization of features and marketing.

Analytics Lessons Learned

You can talk to customers and score interviews at any stage of your startup. Those interviews don’t just give you feedback, they also help you identify segments of the market with unique problems or needs that you might target.

How Are People Solving the Problem Now?

One of the telltale signs that a problem is worth solving is when a lot of people are already trying to solve it or have tried to do so in the past. People will go to amazing lengths to solve really painful problems that matter to them. Typically, they’re using another product that wasn’t meant to solve their problem, but it’s “good enough,” or they’ve built something themselves. Even though you’re doing qualitative interviews, you can still crunch some numbers afterward:

- How many people aren’t trying to solve the problem at all? If people haven’t really made an attempt to solve the problem, you have to be very cautious about moving forward. You’ll have to make them aware of the problem in the first place.

- How many volunteer a solution that’s “good enough”? You’ll spend more time on solutions when you do solution interviews, but startups regularly underestimate the power of “good enough.” Mismatched socks are a universal problem nobody’s getting rich fixing.

Too often, idealistic startups underestimate a market’s inertia. They attack market leaders with features, functionality, and strategies that aren’t meaningful enough to customers. Their MVP has too much “minimum” to provoke a change. They assume that what they’re doing—whether it’s a slicker UI, simpler system, social functionality, or something else—is an obvious win. Then “good enough” bites them in the ass.

The bar for startups to succeed at any real scale is much higher than that of the market leaders. The market leaders are already there, and even if they’re losing ground, it’s generally at a slow pace. Startups need to scale as quickly as possible. You have to be 10 times better than the market leader before anyone will really notice, which means you have to be 100 times more creative, strategic, sneaky, and aggressive. Market leaders may be losing touch with their customers, but they still know them better than anyone else.

You need to work much harder to win customers from incumbents. Don’t just look at the “obvious” flaws of the incumbents (like an outdated design) and assume that’s what needs fixing. You’ll have to dig far deeper in order to find the real customer pain points and make sure you address them quickly and successfully.

Are There Enough People Who Care About This Problem? (or, Understanding the Market)

If you find a problem that’s painful enough for people, the next step is to understand the market size and potential. Remember, one customer isn’t a market, and you have to be careful about solving a problem that too few people genuinely care about.

If you’re trying to estimate the size of a market, it’s a good idea to do both a top-down and a bottom-up analysis, and compare the results. This helps to check your math.

A top-down analysis starts with a big number and breaks it into smaller parts. A bottom-up one does the reverse. Consider, for example, a restaurant in New York City.

- A top-down model would look at the total money people spend dining out in the US, then the percentage of that in New York, then the number of restaurants in the city, and finally calculate the revenues for a single restaurant.

- A bottom-up model would look at the number of tables in a restaurant, the percent that are occupied, and the average price per party. Then it would multiply this by days of the year (adjusting for seasonality).

This is an oversimplification—there are plenty of other factors to consider such as location, type of restaurant, and so on. But the end result should provide two estimates of annual revenue. If they're wildly different, something is wrong with your business model.

As you're conducting problem interviews, remember to ask enough demographic-type questions to understand who the interviewees are. The questions you'll ask will depend a great deal on who you're speaking to and the type of business you're starting. If you're going after a business market, you'll want to know more about a person's position in the company, buying power, budgeting, seasonal influences, and industry. If you're going after a consumer, you're much more interested in lifestyle, interests, social circles, and so on.

What Will It Take to Make Them Aware of the Problem?

If the subjects don't know they have the problem—but you have good evidence that the need really exists—then you need to understand how easily they'll come to realize it, and the vectors of awareness.

Be careful. Most of the time, when people don't have a problem, they'll still agree with you. They don't want to hurt your feelings. To be nice, they'll pretend they have the problem once you alert them to it. If you're convinced that people have the problem—and just need to be made aware of it—you need to find ways to test that assumption.

Some ways to get a more honest answer from people are:

- Get them a prototype early on.
- Use paper prototyping, or a really simple mockup in PowerPoint, Keynote, or Balsamiq, to watch how they interact with your idea without coaching.
- See if they'll pay immediately.
- Watch them explain it to their friends and see if they understand how to spread the message.
- Ask for referrals to others who might care.

A “Day in the Life” of Your Customer

During problem interviews, you want to get a deep understanding of your customer. We mentioned collecting demographics earlier and looking for ways to bucket customers into different groups, but you can take this a step further and gain a lot more insight. You can get inside their heads.

Customers are people. They lead lives. They have kids, they eat too much, they don’t sleep well, they phone in sick, they get bored, they watch too much reality TV. If you’re building for some kind of idealized, economically rational buyer, you’ll fail. But if you know your customers, warts and all, and you build things that naturally fit into their lives, they’ll love you.

To do this, you need to infiltrate your customer’s daily life. Don’t think of “infiltrate” as a bad word. In order for you to succeed, customers need to use your application; if you want them to do so, you need to slot yourself into their lives in an effortless, seamless way. Understanding customers’ daily lives means you can map out everything they do, and when they do it. With the right approach, you’ll start to understand *why* as well. You’ll identify influences (bosses, friends, family members, employees, etc.), limitations, constraints, and opportunities.

One tactic for mapping this out is a “day in the life” storyboard. A storyboard is visual—it’s going to involve lots of multicolored sticky notes plastered on the wall—and it allows you to navigate through a customer’s life and figure out where your solution will have the most impact. Figure 15-1 shows an example of a storyboard.

Having this map in place makes it much easier to come up with good hypotheses around how, when, and by whom your solution will be used. You can experiment with different tactics for interrupting users and infiltrating their lives. The right level of positive access will allow to use your product successfully..

Mapping a day in the life of your customer will also reveal obvious holes in your understanding of your customer, and those are areas of risk you may want to tackle quickly. With a clearer understanding of when and how your solution will be used, you have a better chance of defining a minimum viable product feature set that hits the mark.

The “day in the life” exercise is a way of describing a very detailed, human use case for your solution that goes beyond simply defining target markets and customer segments. After all, you’ll be selling to people. You need to know how to reach them, interrupt them, and make a difference in their lives at the exact moment when they need your solution.

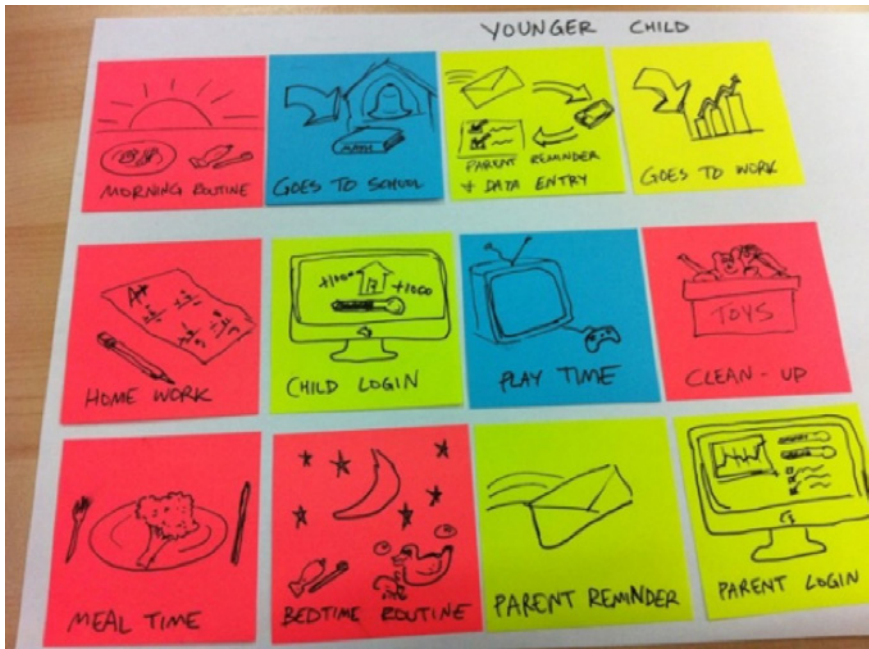


Figure 15-1. How HighScore House mapped the chaos of parenting

User experience designers also rely on mental models of their users to understand how people think about something. A mental model is simply the mental representation of something in the real world—often a simplified version of reality that helps someone work with a thing. Sometimes these are metaphors—the recycle bin on a computer, for example. Other times, they’re simple, fundamental patterns that live deep down in our reptile brains—team allegiance, or xenophobia.

Adaptive Path co-founder Indi Young has written extensively about mental models, developing a number of ways to link your customers’ lives and patterns with the products, services, and interactions you have with them.* Figure 15-2 shows an example of Indi’s work, listing a customer’s morning behaviors alongside various product categories.†

* <http://rosenfeldmedia.com/books/mental-models/info/description/>

† Mental model diagram from Indi Young’s *Mental Models: Aligning Design Strategy with Human Behavior* (Rosenfeld Media). Shared on Flickr (<http://www.flickr.com/photos/rosenfeldmedia/2125040269/in/set-72157603511616271>) under a Creative Commons Attribution-ShareAlike 2.0 Generic license.



Figure 15-2. Overanalyzing the day's ablutions with a mental model

Outlining your customers' behaviors as they go about a particular task, then aligning your activities and features with those behaviors, is a good way to identify missed opportunities to improve engagement, upsell, endorse, or otherwise influence your buyers. If you're making a personal fitness tool, timing interactions with gym visits, holiday binges, and morning ablutions lets you create a more tailored, engaging experience.

PATTERN | Finding People to Talk To

The modern world isn't inclined to physical interaction. We have dozens of ways to engage people at a distance, and when you're trying to find a need, they're mostly bad. Unless you're face-to-face with prospects, you won't see the flinches, the subtle body language, and the little gasps and shrugs that mean the difference between a real problem and a waste of everyone's time.

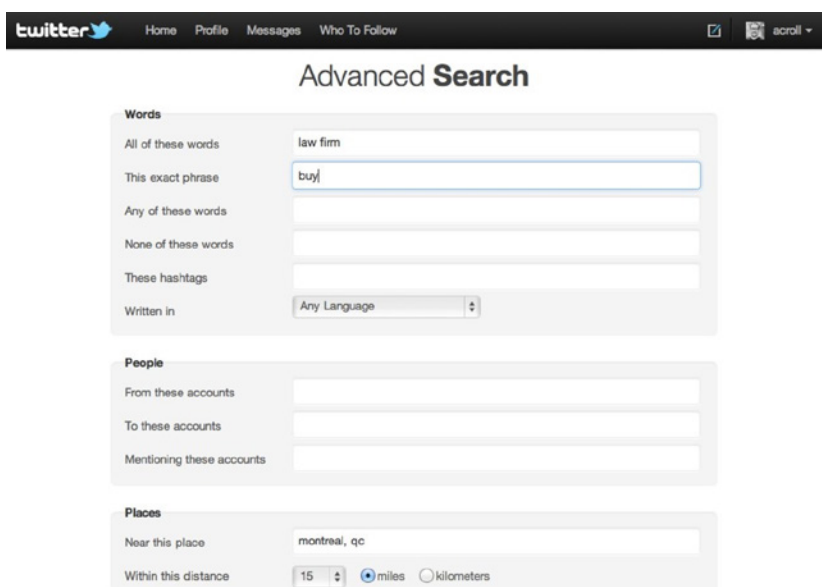
That doesn't mean technology is bad. We have a set of tools for finding prospects that would have seemed like superpowers to our predecessors. Before you get the hell out of the office, you need to find people to talk with. If you can find these people efficiently, that bodes well: it means that, if they're receptive to your idea, you can find more like them and build your customer base.

Here are some dumb, obvious, why-didn't-I-think-of-that ways to find people to talk to, mail, and learn from.

Twitter's Advanced Search

For startups, Twitter is a goldmine. Its asymmetric nature—I can follow you, but you don't have to follow me back—and relatively unwall'd garden means people expect interactions. And we're vain; if you mention someone, he'll probably come find out what you said and who you are. Provided you don't abuse this privilege, it's a great way to find people.

Let's say you're building a product for lawyers and want to talk to people nearby. Put keywords and location information into Twitter's Advanced Search, as shown in Figure 15-3.



The screenshot shows the Twitter Advanced Search interface. At the top is a navigation bar with the Twitter logo and links for Home, Profile, Messages, and Who To Follow. Below this is the 'Advanced Search' title. The interface is divided into three main sections: 'Words', 'People', and 'Places'. The 'Words' section includes filters for 'All of these words' (with 'law firm' entered), 'This exact phrase' (with 'buy' entered), 'Any of these words', 'None of these words', 'These hashtags', and 'Written in' (set to 'Any Language'). The 'People' section includes filters for 'From these accounts', 'To these accounts', and 'Mentioning these accounts'. The 'Places' section includes filters for 'Near this place' (set to 'montreal, qc') and 'Within this distance' (set to '15' miles).

Figure 15-3. Using Twitter's Advanced Search to stalk people

You'll get a list of organizations and people who might qualify similar to the one in Figure 15-4.

Now, if you're careful, you can reach out to them. Don't spam them; get to know them a bit, see where they live and what they say, and when they mention something relevant—or when you feel comfortable doing so—speak up. Just mention them by name, invite them to take a survey, and so on.

There are other interesting tools for digging into Twitter and finding people. Moz has a tool called Followerwonk, and there's also the freely available people search engine, Twellow.

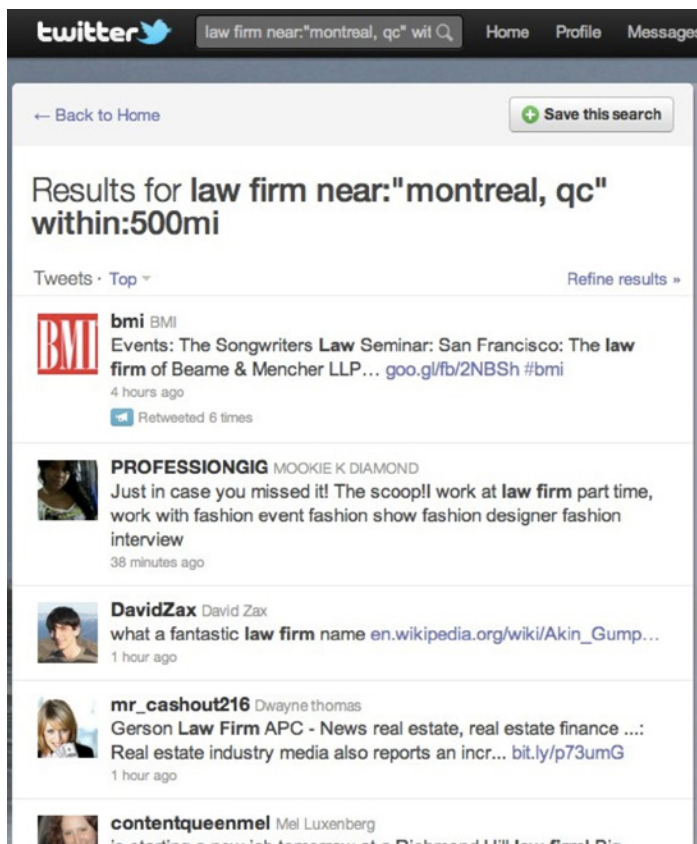


Figure 15-4. Real customers are just a few tweets away

LinkedIn

Another huge boon to startups everywhere is LinkedIn. You can access a tremendous amount of demographic data through searches like the one in Figure 15-5.

You don't need to connect to these people on LinkedIn, because you can just find their names and numbers, look up their firms' phone numbers, and start dialing. But if you do have a friend in common, you'll find that a warm intro works wonders.

LinkedIn also has groups which you can search through and join. Most of these groups are aligned around particular interests, so you can find relevant people and also do some background research.

LinkedIn Account Type: Basic

Home Profile Contacts Groups Jobs Inbox 110 Companies News More People Search...

Find People Advanced People Search Reference Search Saved Searches

Search

Keywords: lawyer

First Name:

Last Name:

Title:

Current or past

Company:

Current or past

School:

Location: Located in or near:

Country: Canada

Postal Code: Lookup

Within: 50 mi (80 km)

View filter options

Sort by: Relevance View: Expanded 21 results Save

Jason Hadid (2nd)
Banking Lawyer at Blake, Cassels & Graydon LLP
Montreal, Canada Area | Law Practice
500+ connections
Current: Lawyer, Financial Services Group at Blake, Cassels & more...
Past: Lawyer, Financial Services / Insolvency & Restructuring more...
In Common: 1 shared connection

Kyle J. Peterson (2nd)
Lawyer at Affleck Greene McMurtry LLP
Toronto, Canada Area | Law Practice
385 connections | 1 recommendation
Current: Lawyer at Affleck Greene McMurtry LLP, Past Candidate at more...
Past: Lawyer at Fasken Martineau DuMoulin, Director of more...
In Common: 1 shared connection

Robert Kimball (2nd)
In-House Counsel Aviva Canada
Toronto, Canada Area | Law Practice
349 connections
Current: Associate Lawyer at Aviva Canada
Past: Associate at McInnes Cooper, Halifax, Associate Lawyer at more...
In Common: 1 shared connection

Nicholas dePencer Wright (2nd)
Business Lawyer, Political Campaigner and Lobbyist
Toronto, Canada Area | Law Practice
84 connections | 4 recommendations

Figure 15-5. All this information is just lying around for you to use

Facebook

Facebook is a bit more risky to mine, since it's a reciprocal relationship (people have to friend you back). But you'll get a sense of the size of a market from your search results alone, as seen in Figure 15-6, and you might find useful groups to join and invite to take a test or meet for a focus-group discussion.

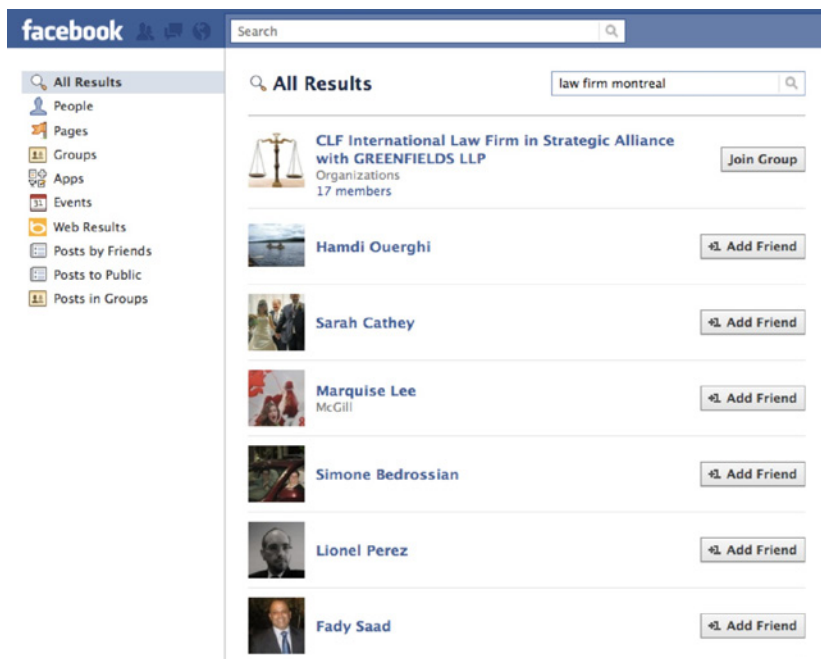


Figure 15-6. Even without details, Facebook shows you who to follow up with

Some of these approaches seem blindingly obvious. But a little preparation before you get out of the office—physically or virtually—can make all the difference, giving you better data sooner and validating or repudiating business assumptions in days instead of weeks.

Getting Answers at Scale

You should continue doing customer interviews (after the first 10–20 or so) and iterate on the questions you ask, dig deeper with people, and learn as much as you can. But you can also expand the scope of your efforts and move into doing some quantitative analysis. It's time to talk to people *at scale*.

This does several things:

- It forces you to formalize your discussions, moving from subjective to objective.
- It tests whether you can command the attention—at scale—that you'll need to thrive.

- It gives you quantitative information you can analyze and segment, which can reveal patterns you won't get from individual groups.
- The respondents may become your beta users and the base of your community.

To talk with people at scale you can employ a number of tactics, including surveys and landing pages. These give you the opportunity to reach a wider audience and build a stronger, data-driven case for the qualitative feedback you received during interviews.

CASE STUDY

LikeBright “Mechanical Turks” Its Way into TechStars

LikeBright is an early-stage startup in the dating space that joined the TechStars Seattle accelerator program in 2011. But it wasn't an easy road. Founder Nick Soman says that at first Andy Sack, managing director of the Seattle program, rejected LikeBright, saying, “We don't think you understand your customer well enough.”

With the application deadline looming, Andy gave Nick a challenge: go speak to 100 single women about their frustrations with dating, and then tell TechStars what he'd learned.

Nick was stuck. How was he going to speak with that many women quickly enough? He didn't think it was possible, at least not easily. And then he decided to run an experiment with Mechanical Turk.*

Mechanical Turk is a service provided by Amazon that allows you to pay small amounts of money for people to complete simple tasks. It's often used to get quick feedback on things like logos and color choices, or to perform small tasks such as tagging a picture or flagging spam.

The idea was to use Mechanical Turk to survey 100 single women, putting out a task (or what Mechanical Turk calls a HIT) asking women (who fit a particular profile) to call Nick. In exchange he paid them \$2. The interviews typically lasted 10–15 minutes.

“In my research, I found that there's a good cross-section of people on Mechanical Turk,” says Nick. “We found lots of highly educated, diverse women that were very willing to speak with us about their dating experiences.”

* <http://customerdevlabs.com/2012/08/21/using-mturk-to-interview-100-customers-in-4-hours/>

Nick set up several Google Voice phone numbers (throwaway numbers that couldn't be tracked or reused) and recruited a few friends to help him out.

He prepared a simple interview script with open-ended questions, since he was digging into the problem validation stage of his startup. Nick says, "I was amazed at the feedback I got. We were able to speak with 100 single women that met our criteria in four hours on one evening."

As a result, Nick gained incredible insight into LikeBright's potential customers and the challenges he would face building the startup. He went back to TechStars and Andy Sack with that know-how and impressed them enough to get accepted. LikeBright's website is now live with a 50% female user base, and recently raised a round of funding. Nick remains a fan of Mechanical Turk. "Since that first foray into interviewing customers, I've probably spoken with over 1,000 people through Mechanical Turk," he says.

Summary

- LikeBright used a technical solution to talk to many end users in a short amount of time.
- After talking to 100 prospects in 24 hours, the founders were accepted to a startup accelerator.
- The combination of Google Voice and Mechanical Turk proved so successful that LikeBright continues to use it regularly.

Analytics Lessons Learned

While there's no substitute for qualitative data, you can use technology to dramatically improve the efficiency of collecting that data. In the Empathy stage, focus on building tools for getting good feedback quickly from many people. Just because customer development isn't code doesn't mean you shouldn't invest heavily in it.

LikeBright chose Mechanical Turk to reach people at scale, but there are plenty of other tools. Surveys can be effective, assuming you've done enough customer development already to know what questions to ask. The challenge with surveys is finding people to answer them. Unlike the one-to-one interviews you've been conducting so far, here you need to automate the task and deal with the inevitable statistical noise.

If you have a social following or access to a mailing list, you can start there, but often, you're trying to find new people to speak with. They're new sources of information, and they're less likely to be biased. That means reaching out to groups with whom you aren't already in touch, ideally through software, so you're not curating each invitation by hand.

Facebook has an advertising platform for reaching very targeted groups of people. You can segment your audience by demographics, interests, and more. Although the click-through rate on Facebook ads is extremely low, you're not necessarily looking for volume at this stage. Finding 20 or 30 people to speak with is a great start, plus you can test messaging this way, through the ads you publish, as well as the subsequent landing pages you have to encourage people to connect with you.

You can advertise on LinkedIn to very targeted audiences. This will cost you some money, but if you've identified a good audience of people through searching LinkedIn contacts and groups, you might consider testing some early messaging through its ad platform.

Google makes it really easy to target campaigns. If you want to promote a survey or signup on the Web, you can do so with remarkable precision. In the first step of setting up an AdWords campaign, you get to specify the location, language, and other information that targets the ad, as shown in Figure 15-7.

✓ Select campaign settings

Create ad and keywords

Select campaign settings

You're ready to create your first campaign!
Try focusing on one product or service to start. You can edit these settings or expand your account whenever you like question mark icons on this page.

General

Campaign name **Tools For Montreal Lawyers** [Edit](#)

Locations and Languages

Locations ? In what geographical locations do you want your ads to appear?

- Province: **Quebec, CA** [Edit](#)

Languages ? **English** [Edit](#)

[+ Advanced location options](#)

Networks and devices

Networks ? **Search** [Edit](#)

Devices ? **All** [Edit](#)

Bidding and budget

Bidding option ? **Focus on clicks, manual maximum CPC bidding** [Edit](#)

Budget ? **CA\$50.00/day** [Edit](#)

Figure 15-7. Some of the ways you can control who sees your ad

Once you've done that, you can create your message, using a screen like the one in Figure 15-8. This is an excellent way to try out different taglines and approaches: even the ones that don't get clicks show you something, because you know what not to say. Try different appeals to basic emotions: fear, greed, love, wealth, and so on. Learn what gets people clicking and what keeps them around long enough to fill out a survey or submit an email.

✓ Select campaign settings

Create ad and keywords

Create ad and keywords

Create an ad

☒ Text ad
 ☐ Image ad
 ☐ Display ad builder
 ☐ WAP mobile ad

Now it's time to write your first ad! To appeal to customers searching for your product or service, highlight what sets you apart from specific text. [Help me write a great text ad.](#)

Headline

Lawyers: work smarter

Description line 1

How much of your time is wasted?

Description line 2

Take this free 5 minute survey.

Display URL [?](#)

<http://smartlaw.com>

Destination URL [?](#)

http:// [http://smartlaw.com](#)

Ad preview: The following ad previews may be formatted slightly differently from what is shown to users. [Learn more](#)

Side ad

Lawyers: work smarter
 How much of your time is wasted?
 Take this free 5 minute survey.
<http://smartlaw.com>

Top ad

Lawyers: work smarter - How much of your time is wasted?
 Take this free 5 minute survey.
<http://smartlaw.com>

Ad extensions expand your ad with additional information like a business address or product images.
[Take a tour.](#)

Figure 15-8. Would you click on these ads?

Google also has a survey offering, called Google Consumer Surveys, that's specifically designed to collect consumer information.* Because of the wide reach of Google's publishing and advertising network, the company can generate results that are statistically representative of segments of the population as a whole.

Google's technique uses a "survey wall" approach, but by simplifying the survey process to individual questions requiring only a click or two, the company achieves a 23.1% response rate (compared to less than 1% for "intercept" surveys, 7–14% for phone surveys, and 15% for Internet panels).† However, because of the quick-response format, it's hard to collect multiple responses and correlate them, which limits the kinds of analysis and segmentation you can do.

* <http://www.google.com/insights/consumersurveys/how>

† http://www.google.com/insights/consumersurveys/static/consumer_surveys_whitepaper_v2.pdf

PATTERN | Creating an Answers-at-Scale Campaign

An effective survey involves several critical steps: survey design, testing, distribution, and analysis. But before you do any of these, know why you're asking the questions in the first place. Lean is all about identifying and quantifying the risk. What kind of uncertainty are you trying to quantify by doing a survey?

- If you're asking what existing brands come to mind in a particular industry, will you use this information to market alongside them? Address competitive threats? Choose partners?
- If you're asking how customers try to find a product or service, will this inform your marketing campaigns and choice of media?
- If you're asking how much money people spend on a problem you're planning to address, how will this shape your pricing strategy?
- If you're testing which tagline or unique value proposition resonates best with customers, will you choose the winning one, or just take that as advice?

Don't just ask questions. Know *how the answers to the questions will change your behavior*. In other words, draw a line in the sand before you run the survey. Your earlier problem interviews showed you an opportunity; now, you're checking to see whether that opportunity exists in the market as a whole. For each quantifiable question, decide what would be a "good" score. Write it down somewhere so you'll remember.

Survey Design

Your survey should include three kinds of questions:

- Demographics and psychographics you can use to segment the responses, such as age, gender, or Internet usage.
- Quantifiable questions that you can analyze statistically, such as ratings, agreement or disagreement with a statement, or selecting something from a list.
- Open-ended questions that allow respondents to add qualitative data.

Always ask the segmentation questions up front and the open-ended ones at the end. That way you know if your sample was representative of the market you're targeting, and if people don't finish the last questions, you still have enough quantitative responses to generate results in which you can be confident.

Test the Survey

Before sending it out, try the survey on people who haven't seen it. You'll almost always find they get stuck or don't understand something. You're not ready to send the survey out until at least three people who haven't seen it, and are in your target market, can complete it without questions and then *explain to you what each question meant*. This is no exaggeration: everyone gets surveys wrong.

Send the Survey Out

You want to reach people you don't know. You could tweet out a link to the survey form or landing page, but you'll naturally get respondents who are in your extended social circle. This is a time when it makes sense to pay for access to a new audience.

Design several ads that link to the survey. They can take several forms:

- **Name the audience you're targeting.** ("Are you a single mom? Take this brief survey and help us address a big challenge.")
- **Mention the problem you're dealing with.** ("Can't sleep? We're trying to fix that, and want your input.")
- **Mention the solution or your unique value proposition, without a sales pitch.** ("Our accounting software automatically finds tax breaks. Help us plan the product roadmap.") Be careful not to lead the witness; don't use this if you're still trying to settle on positioning.

Remember, too, that the first question you're asking is "Was my message compelling enough to convince them to take the survey?" You're trying out a number of different value propositions. In some cases, you don't even care about a survey—we know one entrepreneur who tried out various taglines, all of which pointed to a spam site. All he needed to know was which one got the most clicks, and he didn't want to tell anyone who he was yet.

You can also use mailing lists. Some user groups or newsletters may be willing to feature you on their page or in a mail-out if what you're doing is relevant to their audience.

Collect the Information

When you run the survey, measure your cost per completed response. Do a small test of a few dozen responses first. If your numbers are low, check whether people are abandoning on a particular form field—some analytics tools like ClickTale let you do this. Then remove that field

and see if completion rates go up. You can also try breaking up the survey into smaller ones, asking fewer questions, or changing your call to action.

While you're collecting information, don't forget to also request permission to contact respondents and collect contact information. If you've found a workable solution to a real problem, some of them may become your beta customers.

Analyze the Data

Finally, crunch the data properly. You're actually looking at three things.

- First, were you able to capture the attention of the market? Did people click on your ads and links? Which ones worked best?
- Second, are you on the right track? What decisions can you now make with the data you've collected?
- Third, will people try out your solution/product? How many of your respondents were willing to be contacted? How many agreed to join a forum or a beta? How many asked for access in their open-ended responses?

Statistics are important here. Don't skimp on the math—make sure you learn everything you can from your efforts.

- Calculate the average, mean, and standard deviation of the quantifiable questions. Which slogan won? Which competitor is most common? Was there a clear winner, or was the difference marginal?
- Analyze each quantifiable question by each segment to see if a particular group of your respondents answered differently. Use pivot tables for this kind of analysis (see the upcoming sidebar "What's a Pivot Table?" for details); you'll quickly see if a particular response correlated to a particular group. This will help you focus your efforts or see where one set of answers is skewing the rest.

What's a Pivot Table?

Most of us have used a spreadsheet. But if you want to take your analytical skills to the next level, you need to move up to pivot tables. This feature lets you quickly analyze many rows of data as if it were a database, without, well, the database.

Imagine that you have 1,000 responses to a survey. Each response is a row in a spreadsheet, containing a number of fields of data. The first column has time and date, the next has email, and the rest have the individual responses that particular respondents gave. Imagine, for example, that your survey asked respondents their gender, the number of hours per week that they play video games, and their age, as shown in the following table.

Gender	Hours Played	Age
M	8	50–60
F	7	50–60
M	12	30–40
F	10	20–30
F	7	40–50
M	14	20–30
F	7	50–60
M	11	30–40
F	8	30–40
M	11	40–50
M	6	60–70
F	5	50–60
F	9	40–50
Average:	8.85	