the

Experimentation Machine

Finding
Product-Market Fit
in the Age of AI

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Table of Contents

Introduction

Timeless Methods, Timely Tools

THERE'S A RUNNING JOKE in Startupland[1] that artificial intelligence (AI) is going to replace *all* humans inside a business: the founders, product managers, salespeople, engineers, and certainly the lawyers. While some tasks will be automated, I don't expect fully autonomous startups anytime soon. But massive changes *are* happening, and some folks will be left behind.

AI may not replace the startup founder, but startup founders who use AI are going to replace founders who don't.

My fascination with AI began as a computer science major at Harvard University in the late 1980s and early 1990s. That era was marked by the birth of personal computers and the emergence of telecommunications protocols that enabled the widespread use of email and eventually provided the underpinnings for the Internet. It was a time of rapid technological advancement, and I was captivated by the potential

of these new tools. As a science fiction buff (Isaac Asimov, in particular), I loved to imagine a world of robots and cognitive aids. I took graduate courses in neural networks, natural language processing, and computer vision in parallel to my undergraduate computer science work. My thesis was titled *Coordinating Natural Language and Graphics in the Automatic Generation of Explanations of Causal Business Models*—a long-winded way of saying I applied early AI concepts to generate sentences that explained business decisions. Sound familiar?

After completing my computer science degree and then later my MBA from Harvard, I entered Startupland, where I learned how to apply leading-edge AI in practical use cases. As an entrepreneur, I joined and later co-founded software companies that harnessed early AI and machine learning technology. One of these ventures aimed to personalize e-commerce experiences (Open Market, IPO 1996) and another helped parents and students save for college (Upromise, acquired by Sallie Mae). Since co-founding the venture capital (VC) firm, Flybridge, I have led the seed rounds for several groundbreaking AI startups, including one that utilized machine learning to provide fair and transparent underwriting of consumer loans (Zest AI) and another that created an early robot companion for the home.

When ChatGPT debuted in late 2022, I knew we had reached a point of no return.

Generative AI—powered by Large Language Models (LLMs) to create strikingly creative and human content in text, code, and visuals—is an incredible example of science fiction becoming science fact. From the consumer's perspec-

tive, computers suddenly became capable of interacting in ways so humanlike that the difference between human and machine was imperceptible. They could tell you bedtime stories, generate cover letters, code up a website, and even paint you a Monet. The famous Turing Test—a capabilities threshold to ascertain if machines could pass as human—was shattered.

Gen AI's rate of adoption is nearly as staggering as its creative output. It took the World Wide Web seven years to reach 100 million users. ChatGPT reached that milestone in just two months. As of this writing, ChatGPT (still the largest AI platform) has over 300 million *weekly* active users in just two years since its launch, and it continues to grow by double digits every quarter.

For businesses, generative AI represents the largest boost in productivity and opportunity since the Internet. I have become fascinated with how to apply this radical new technology in startups. AI has become a focal point in my Harvard Business School (HBS) MBA course, Launching Tech Ventures. We've also gone all in on AI at Flybridge, rewriting our investment thesis to exclusively focus on "AI-forward" startups across industries.

In particular, I am interested in how startup founders and their teams can use AI to accelerate the search for product-market fit, and later, to scale. Like a catalyst in a chemical reaction, AI tools have the power to turbocharge startups through the learning and growth curves, creating bigger and better outcomes, faster than we ever thought possible. *Founders who use AI will replace founders who don't.*

But ChatGPT and other AI tools are just that—tools in the startup toolbox. Founders still need to answer the same fundamental questions they always have:

- Who is my customer?
- What problem can I help them solve?
- How do I make money and build a sustainable, profitable business?

To answer these questions, I have long advocated for a scientific approach to building startups. Founders should create hypotheses, run experiments, and implement the results. That's why my preferred mental model for startups is the *Experimentation Machine*. The goal as an early-stage founder is to maximize your learning by testing assumptions and refining your ideas. The key is to do this quickly and successfully enough to find product-market fit before you run out of money. AI is the ultimate experiment accelerator for startups.

This book will guide you through the process of building your own Experimentation Machine in the age of AI. I recognize I am trying to hit a moving target when it comes to describing the capabilities of this technology. The field is advancing at a dizzying pace, but I aim to give you a tried-and-true playbook for finding product-market fit while utilizing the most cutting-edge tools available today—no matter what field you are operating in.

Here is my goal for this book: *Timeless methods. Timely tools.* We will study companies from before and after gen AI's

"Big Bang" moment and apply the timeless methods of the Experimentation Machine methodology while pushing the envelope with modern AI-powered strategies.

In the chapters that follow, I will draw from my HBS case studies, as well as Flybridge portfolio companies, to lay out the playbook to methodically transform your startup into an experimentation machine, catalyzed by AI, to efficiently find product-market fit and build a successful, enduring business. Specifically:

Chapter 1 breaks down the Experimentation Machine methodology. You will learn the fundamentals of building an experiment-driven organization across product, growth, sales, and business development. You will discover why test selection is the core component of startup strategy and how to sequence your experiments, studying the case of Squire.

Chapter 2 explores the concept of becoming a 10x Founder: a new generation of super-founder who harnesses AI to supercharge their experimentation, leverages their extremely limited assets, and achieves rapid scale *without* organizational bloat. To illustrate, I'll introduce you to the founders of Topline Pro and Talktastic.

In Chapter 3, we will discover a new definition of product-market fit (PMF)—one that looks beyond growth metrics to ensure you're building a sustainable, long-term business. We will cover the HUNCH framework for evaluating the strength of your product-market fit and look at startups like Superhuman and ClassPass as examples.

Chapter 4 covers the first set of experiments every startup must run: refining your customer value proposition (CVP). You'll learn to generate and test hypotheses to refine your product offering and how AI can help in that process. The innovative biotech startup, C16 Biosciences, will serve as a case study, along with revisiting Squire.

Go-to-market strategy (GTM) will be the focus of Chapter 5, including tests to discover your ideal beachhead market, sales model, and channels. We will also explore how AI-forward startups are supercharging their GTM strategies. This chapter will feature case studies of Ovia and Shippo as well as our portfolio companies AllSpice and Teal.

Chapter 6 will introduce you to the "magical" business models that yield the highest valuations. We will cover the critical importance of unit economics and the dangers of delaying revenue for too long. You'll see how companies like Khatabook and Ovia launched experiments to help find their winning profit formulas.

Chapter 7 will introduce the power of AI agents to scale your product from a Minimal Viable Product (MVP) to a robust offering in the age of AI. I will share some specific no-code and low-code strategies to build faster, iterate better, and avoid technical debt. Case studies featured include Blitzy.AI and Shippo.

In Chapter 8, we will cover strategies for scaling go-to-market and expanding your total addressable market (TAM). I will

introduce the Sales Learning Curve, AI-powered marketing tactics, and three ways to reach new markets.

Chapter 9 will focus on scaling your people in the age of AI. We will discuss who to hire (introducing you to the 10x Joiner), *how* to hire, and when. Since AI is making startups more efficient, every new employee matters more than it did in the past.

Chapter 10 shifts our focus to the risks and challenges that AI presents, as well as long-standing systemic issues in Startupland. We will first look at AI-specific risks, like the environmental impact of compute, and then tackle the challenges of ethics and equity in the startup ecosystem, because AI will only exacerbate existing issues. You'll learn how to navigate your organizational biases and build an inclusive company that makes a positive impact. Featured case studies include Juul and Snapchat.

In the Conclusion, I will say a few final words on the experimentation mindset that founders must acquire to be successful today. This mindset embraces continuous learning, AI leverage, and giving back to the Startupland ecosystem that helped make you successful.

Last but not least, I share four deep dives in the Appendix on important topics that didn't quite fit into the book's main narrative: AI Prompting Tips, Startup Valuations, Cohort Analysis, and a curated list of AI tools.

While I will mention a few specific, state-of-the-art AI tools in this book, there are many cases where I refer to "AI tools" generally because, frankly, there are dozens of options, and the best ones will likely be different when you're reading this than the day I'm writing it. When I reference an AI tool for sales enablement, for instance, I leave it to you to research the best product available. My goal is to simply make you aware of all the possibilities at your fingertips.

Let me share one last piece of advice: You may feel compelled to wait to adopt AI in your business until it gets better, more mature, or more precise. But remember that the AI tools you use today are the *worst* they will ever be. If you wait until AI is "perfect," you will be waiting a long time, and by then it will be too late.

As futurist and sci-fi author William Gibson said, "The future is here, it's just not evenly distributed." This is your chance to live in the future and reap the rewards. I hope this book will guide you on your journey through Startupland to great success. Good luck!

—Jeff

Chapter 1

The Science of Startups: How to Build an Experimentation Machine

EVERY SCIENTIST NEEDS A lab. For Songe LaRon and Dave Salvant, the founders of Squire Technologies,[2] that lab was a barber shop in Manhattan's Chelsea Market.

LaRon and Salvant started Squire with a simple goal: make it easier to book a haircut. "Every time you needed to get a haircut, it was unpleasant," Salvant said. "You either had to plan ahead and call to make an appointment, or you had to show up in the shop and wait for sometimes an hour or more; you never knew how long it would be. You needed to get cash because most barbers were cash only. You walk out feeling great, but it was painful to get there."

The duo imagined building the OpenTable for barbershops—an app that would allow patrons to schedule haircuts

at their convenience. Maybe, one day, customers could even pay for haircuts online.

The concept sounds obvious today, but back in 2014, there were many questions and hypotheses that needed testing: Would barbershops take appointments over an app? (The answer initially, for many barbers, was no.) Was the barbershop market large enough to matter? (Yes, despite the challenge of nailing down the exact size.) And perhaps most importantly to investors, were LaRon and Salvant the right founders for this mission?

On the surface, it seems unlikely that LaRon, an attorney, and Salvant, a banker, could pull off a technology startup in the barbershop industry. Neither had experience coding, building products, raising money, or leading teams, never mind cutting hair. In their first attempt to build the app, the founders were nearly scammed out of $5,000 by someone posing as an engineer. Despite their shortcomings, LaRon and Salvant had the most important trait of any startup founder: an experimentation mindset. They approached building Squire like a pair of scientists—creating hypotheses, devising tests, learning, and iterating.

LaRon and Salvant eventually found a legitimate software developer to create the first version of the Squire app, but they struggled to find barbershops willing to test it out. So they set up a barber chair inside their WeWork office on 220 Broadway and brought in barbers to give haircuts. Each appointment became a learning opportunity that helped them refine the app and user experience. It also proved to the founders that there was demand for their product—at

least on the consumer side. Around this time they met Jesse Middleton, the co-founder of WeWork Labs and now my partner at Flybridge. LaRon and Salvant impressed Jesse with their grit and passion, and in turn Jesse organized some friends to invest the first $150,000 into Squire. The founders then parlayed this "social proof" into another $150,000 investment a month later.

With the vote of confidence and influx of cash, LaRon and Salvant expanded throughout the NYC barbershop community, but they soon hit another existential roadblock: inertia. "Barbers would use the app if we sent them new business, but they weren't converting their existing customers into Squire users," said Salvant. "They ended up having two systems in place, and the feedback we were getting was, 'I need something to manage my entire barbershop.'"

In order for Squire to succeed, the vision would have to evolve from "the OpenTable for barbershop customers" to an end-to-end finance and management platform for barbershop *owners*. They would compete against Mindbody and StyleSeat for scheduling, Square and Clover (and cash) for point-of-sale, QuickBooks for reporting, ADP for payroll, Yelp for customer discovery, and Mailchimp for CRM. If they could pull it off, Salvant and LaRon estimated their suite of solutions for barbershops would be worth $1,000 per month, per customer. With over 300,000 barbershops in the country—and 10,000 in NYC alone—this new vision presented a multi-billion-dollar opportunity.

This is when Salvant and LaRon invested in their Chelsea Market laboratory. When a barbershop owner—an early

Squire customer—told the founders he wanted to retire, the duo decided to buy out his lease and run the shop themselves. This move cost the company $20,000 at a time when they had less than $40,000 in the bank, but LaRon and Salvant knew the experience could help them perfect their new management platform. "Running that shop was a major learning experience," said LaRon. "We really built the product based on what we learned there."

Over the next three years, the Squire founders would clear every obstacle in front of them with ingenuity and grit. As first-time founders and Black men, they faced more skepticism and outright pushback than their white counterparts. They slogged through multiple rounds of fundraising at less-than-ideal terms, constantly addressing questions about their competence and market opportunity. Despite all of this, the founders secured an $8 million Series A in February 2019 and a $27 million Series B in March 2020, which valued the company at over $85 million. Grinding through years of hard work helped Squire survive and expand through the Covid-19 pandemic.

Today, the company services more than 3,000 barbershops across the United States, Canada, and United Kingdom. In 2023, they processed over $1 billion in transactions and the company was most recently valued at over $750 million.

LaRon and Salvant began their startup journey a few years before the advent of generative AI, but their story illustrates a more fundamental pattern we see across all successful startups: a willingness to experiment. They made small bets each step of the way, doing things that didn't scale (to para-

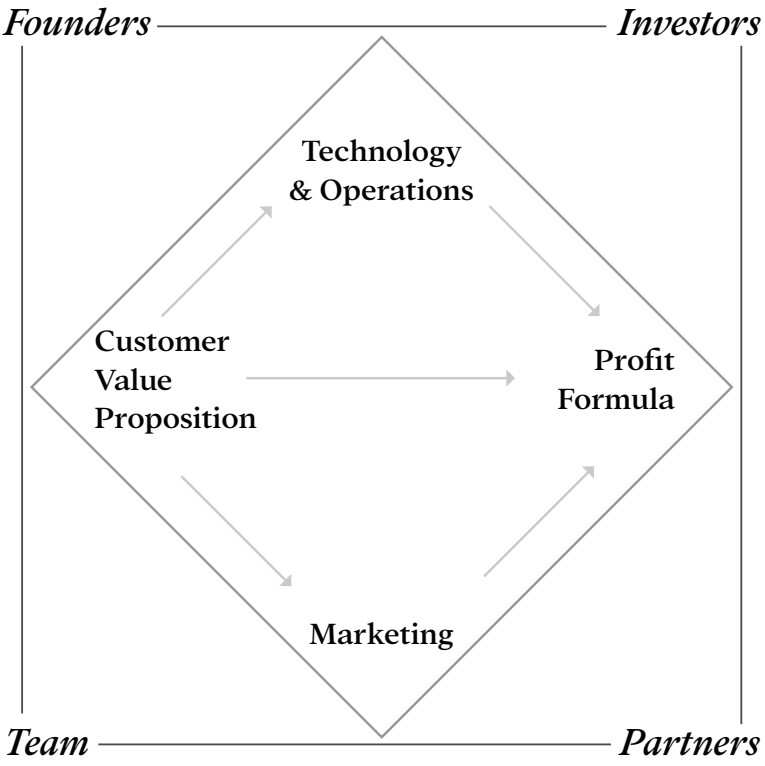
phrase Y Combinator co-founder Paul Graham) in service of learning. LaRon and Salvant's experience was a trial by fire. It's what makes their success so inspiring.

Building a startup is nothing like running a traditional business. To understand the difference, let's start by breaking down the traditional business model.

Deconstructing the Business Model

Startups are businesses without working business models. The mission is to build a working business model—a harmonious mix of business functions and stakeholders—before the startup runs out of money or a competitor beats them to it.

Every business is comprised of the same parts: a customer value proposition, go-to-market (GTM) plan, technology/operations infrastructure, and a monetization strategy (ideally one that eventually makes the business a profit). These four parts together are typically called a business model. Business models need people to operate them (yes, even in the age of AI): stakeholders like the founders, investors, teams, and partners. My HBS colleague, Professor Tom Eisenmann, captured this relationship between business functions and stakeholders in his Diamond-and-Square Framework:



The Diamond-and-Square Framework

These are the essential pieces of every money-making enterprise on Earth, from your favorite corner barbershop to Amazon. In a successful business, these parts are more or less working in harmony. In struggling businesses, one or more of these parts are broken or missing entirely.

Startups are different. They are discovering and creating entire elements of the business model on the fly, often in a messy fashion.

Let's think back to the Squire case study. Founders Songe LaRon and Dave Salvant had an initial Customer Value Proposition—the OpenTable for barbershops—that proved to be incomplete. That didn't make Squire a failure; it made it a startup. Later, the founders struggled to find an efficient GTM strategy. They hoped advertising and consumer-driven word of mouth would grow the business, but LaRon and Salvant eventually settled on outbound sales as their primary GTM motion.

What about technology and operations? I shared how Squire was almost conned out of $5,000 by a fake engineer. The founders also tried hiring numerous technical leads in the early years without success. As non-technical founders, LaRon and Salvant cobbled together barely working MVPs of their app to continue learning and experimenting. In 2017, after finally gaining some traction, the duo knew their app needed an engineering overhaul to keep up with demand. They opted to move to Buffalo, New York, to secure $650,000 in funding from an accelerator and lived there for a year. Like many startups, Squire's early days were defined by broken or insufficient products and technology that didn't scale.

Squire's monetization plan was no less uncertain for the first half decade of the startup's existence. The founders originally planned to charge a $1 transaction fee for every scheduled appointment, just like OpenTable did for restaurant reservations. But when Squire's vision expanded to the backend platform for barbershop owners, LaRon and Salvant switched to a subscription model plus transaction fees. The Covid-19 pandemic forced Squire to revisit its monetization strategy yet again. To support their barbershop clientele, the

founders chose to temporarily waive subscription fees, which made up 13 percent of their revenue and the majority of their gross margin at the time. Squire's investors strongly advised against the move, but LaRon and Salvant earned enormous amounts of customer goodwill, which fueled Squire's growth once barbershops opened back up for business.

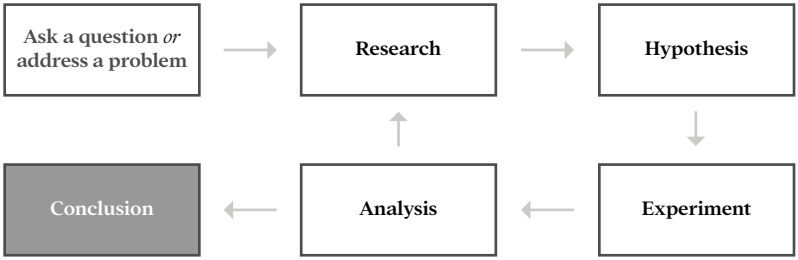
A startup's human resources are just as precarious as its business components. A successful startup needs the right mix of founder-market-fit, investors, team members, and channel partners. None of these stakeholders are guaranteed in the early days.

So how on earth does any startup get off the ground? It's a race against time and money—often not even enough to support the founders full time. Anyone approaching building and running a startup as they would a normal business is doomed to fail. Startup founders need a different operating model to turn their ideas into bona fide businesses. I call this model the Experimentation Machine.

The Experimentation Machine: An Operating Model for Startups

A startup founder's job is to build an experiment-driven organization, i.e., an Experimentation Machine.

The goal is to test and probe for answers to the most fundamental questions of any business: Who is my ideal customer? What do they want and need? How do I deliver it to them? How do I find more ideal customers? How do I make money and build a sustainable business?



Following the Scientific Method

Building an Experimentation Machine requires a basic understanding of the scientific method. It starts with asking a question or identifying a problem: *Why is it so hard to get a haircut?* Next is research: How are things done today? What are the alternatives and workarounds to this problem? What do people actually want? When LaRon and Salvant first had their idea for Squire, they started by surveying as many barbers and barbershop customers as they could find. This informed their earliest product ideas.

After conducting deep customer discovery—the process of thoroughly researching potential customers' needs and problems—the founding team creates a hypothesis or an educated guess. Would barbershop customers book appointments through an app? Would barbershop owners adopt a new platform for scheduling? Founders need to make hypotheses for every part of their business: customer value proposition, go-to-market, technology infrastructure, and monetization plan. A hypothesis must be falsifiable. Can you definitively prove it to be correct or incorrect?

Then you identify the most important hypothesis and design an experiment to test it. LaRon and Salvant created a

basic mobile app and set up a barber chair inside WeWork. They determined that customers wanted an app for scheduling appointments, but barbershop owners were reluctant to adopt another tool (especially one that cost money). The founders then built a lab to run even more experiments—the Chelsea Market barbershop—and learned what was needed in a management platform for shop owners.

Finally, founding teams must analyze and implement the results of the experiment. There are no "failed" experiments. The only goal is to learn, therefore the only way to fail is to not take anything away from a test. Then the process starts again: question, research, hypothesize, experiment, and analyze.

Building a startup is like navigating an uncharted territory. In my last book, I dubbed this territory *Startupland.* The journey through Startupland goes through three distinct phases:

- ***The Jungle:*** The land is wild and dangerous. There are no paths and no set direction. All you have is a machete to cut through the brush.

- ***The Dirt Road:*** After trial and error, you eventually clear a way through the jungle. The road is rough and winding, but at least you know generally which way to go.

- ***The Highway:*** Through sheer effort and a little bit of luck, you pave your dirt road into a highway, where you can move fast and get to your final destination (relatively) safely.

Startupland has no map to show you the way, but you do have a compass: the Experimentation Machine framework. By testing and iterating, you will eventually find the answers to build a functioning business model. The challenge is, can you do it quickly enough before the jungle swallows you up?

Test Selection as Strategy

The Experimentation Machine is the basic operating model for startups, but what tests should you run and when? In an environment where you have limited time and even more limited resources, test selection becomes the most important strategic decision.

Startup founders should not expect to discover a working business model right away. Rather than try to carve a highway out of a jungle, they should think about their progress in terms of key milestones: Which experiments will unlock the founder's ability to raise more capital and attract better resources?

The strategy of test selection boils down to three essential questions:

1. Which business model component is ***most controversial,*** and what is the essential hypothesis for that component?

2. What is the ***key milestone*** I need to achieve that will lead to my next valuation inflection point, helping unlock more capital from investors?

3. Where does the ***greatest risk*** exist in my business model, and what does the flow of dependencies look like?

The answers depend on the startup and their stage of growth. However, when starting from scratch or running the Experimentation Machine framework for the first time, startups should run tests in the following sequence:

1. ***Customer Value Proposition experiments:*** Who are your ideal customers, what do they want, and how does the startup deliver? The primary business function under scrutiny is the product.

2. ***Go-to-market experiments:*** What is the ideal sales model? What are the most efficient customer acquisition channels? What is your best growth flywheel? Product, sales, and growth are the key business functions to test in this stage.

3. ***Business model/profit formula experiments:*** How do you monetize and price? How do you improve your margins? Are you maximizing your potential valuation? Marketing, customer success, and business development now enter the picture.

This sequence answers the most fundamental questions about your startup in the order needed to build a functioning business. Your monetization strategy does not matter if you can't attract customers, and your go-to-market strategy is useless without having a strong customer value proposition. We will dive into each of these experimental sets in Chapters 4 through 6.

Finally, startup founders must check and re-check their Experimentation Machine often to ensure it's in working order. It is up to the leadership to determine that experiment sequencing, design, and execution are running optimally. Here are a few important questions to ask yourself:

Sequencing →	**Design** →	**Execution**
Is this experiment the right one to focus on at this exact moment?	Have I narrowed the experiment to focus only on the Most Important Thing at this exact moment?	Am I set up to execute this experiment properly?
Are there dependencies I need to think through?	Is the experiment tightly defined and straightforward?	Do I have the right resources and team?
	Will the experiment yield a falsifiable outcome?	Are we instrumented to collect the necessary data to evaluate the results?

A startup founder's job is that of Chief Experimentation Officer. You must guide your team to adopt the scientific method and run the Experimentation Machine operating model diligently. When done properly, like Songe LaRon and

Dave Salvant, you will have a chance to find your way out of the startup jungle and onto a dirt road. With a bit more luck and a lot of hard work, you may pave a highway that leads your startup to scale and financial exit.

From a thirty-thousand-foot view, the journey looks like this:

	#1 Value Prop Fit	#2 GTM Fit	#3 Biz Model Fit
Goal of Phase	Customer Love (40% Test)	Repeatable Acquisition	Unit Economics, Growth & Strategic Moat
Target Market	Innovators	Early Adopters	Early Majority
GTM Process	Founder Selling	Playbook Discovery	Partners/Sales Team
Sales Leader	Founder	Player-coach	Process/Team Builder
Demand Gen.	Personal Network + Referrals	Paid Mktg Experiments, Partner/Channel Experiments	Multi-Channel Partner with Sales
Pricing	New: Price Low, Prove Demand Existing: Price High, Prove Willingness to Pay	Solve for Breakeven	Solve for Profitable Unit Economics
Risks	PMF False Positives, "Tech Crunch" False Positive	Vanity Metrics/ False Positives, Runway to Pivot	Premature Scaling

Putting It All Together

I share this so you have a sense of the big picture as you dive into the book. The details of these phases will be discussed in the coming chapters.

Each of these stages—CVP fit, GTM fit, and Biz Model fit—is a key milestone in the startup journey. They are chances to raise funding and attract talent. As a VC, I evaluate startup investments with these benchmarks in mind and look for evidence of future valuation inflection points. Everyone in my

field does. Founders should keep these stages in mind as well when making strategic decisions. Don't invest in a sales team before you have found a working CVP. Be wary of scaling prematurely even after you find a successful business model.

The Experimentation Machine model will not guarantee startup success, but it gives you the best opportunity. In a deeply uncertain environment, the best strategy is to place small bets and iterate along the way.

Moving Faster with AI

Speed is critical to a startup. The more experiments you can run, the more likely you are to discover a functioning business model. For this reason, generative AI represents the greatest leverage-booster for startups since the Internet. We are entering a new era of startups, where founders are accomplishing much more with much less, rapidly accelerating the search for product-market fit. Let me now introduce you to the 10x Founder.

Chapter 2

The 10x Founder: Harnessing AI to Create Startup Superpowers

In February 2024, OpenAI co-founder and CEO Sam Altman made this prediction during an interview at a JP Morgan conference:[3]

"We're going to see ten-person companies with billion-dollar valuations pretty soon . . . In my little group chat with my tech CEO friends, there's this betting pool for the first year there is a one-person billion-dollar company, which would've been unimaginable without AI. And now [it] will happen."

Startups are defined by their constraints: They have limited time, money, talent, resources, and opportunity compared to established businesses. But their main advantage—their ace in the hole—is their ability to move fast. As we covered in Chapter 1, speed is imperative as startups search for a functioning business model. And now with the power of generative AI, founders can—and will be expected to—move even faster. Welcome to the era of the 10x Founder.

The startup world has long mythologized the 10x developer: The computer engineer who is so good that they can do the work of 10 average engineers. 10x developers were once the difference between a startup becoming a unicorn and fizzling out.

10x Founders have their own set of superpowers: They have mastered the relatively new skill of AI delegation to build faster, leaner, and more profitable startups than ever before possible. Using AI, they run experiments more quickly to out-learn and out-iterate their competitors. They scale their companies with one-tenth the headcount (or less). In short, 10x Founders use AI in creative ways to improve every function of their business.

The best way to understand a 10x Founder is to introduce you to a few of them. At Flybridge's Founders Week 2024 Conference, we featured numerous 10x Founders who are using AI to grow rapidly and efficiently. Here are the stories of two startups that presented at the conference:

Unlocking a Fragmented Market: Nick Ornitz and Shannon Kay, Topline Pro

One of the major themes of AI is how it will unlock new markets and business opportunities. Topline Pro, an all-in-one website builder and marketing provider for home services companies, would have been nearly impossible to build before generative AI. Co-founders Nick Ornitz and Shannon Kay started their company in 2020 as Dwelling, a video chat

service for plumbers and homeowners. They even dropped out of HBS (which, for the record, I did not encourage!) and entered Y Combinator to build their vision. But when plumbers said their biggest pain was finding new business, Ornitz and Kay pivoted. They rebranded as Topline Pro and re-launched in January 2022, using GPT-3 (the OpenAI model *before* ChatGPT) to rapidly create SEO-optimized websites for home service providers.

Today, Topline Pro's mission is to serve the highly fragmented market of over five million service-based businesses in the United States, including plumbers, electricians, general contractors, landscapers, and more. As of July 2023, Topline Pro had helped generate $180 million in new business for thousands of home service providers around the country. They are doing this with a team of less than forty humans.

With a highly fragmented, hyper-local market like home services, the biggest challenge is reaching your target customers in an efficient manner. The "marketing for home services" market is also highly fragmented, dominated by local freelancers and agencies. But Topline Pro has created an AI-powered outbound sales strategy that connects them to thousands of new small businesses a month and has powered their growth.

First, Topline Pro uses ChatGPT to create "SparkNotes" of every small business in a local market. They scour Facebook groups like "Lawncare Mafia" and score every profile to identify the most qualified leads. "It starts with how we qualify and find leads," said Ornitz. "We look at all the different profiles of home service businesses online and then we feed

the history of those business profiles through an internal tool that uses GPT to identify themes about the business." This information is added to the company's CRM and used by Topline Pro's salesforce.

Then Topline Pro creates personalized sales content using their GPT-powered tools. It's hard to get in touch with home service business owners because they rarely check their email, but Ornitz and Kay thought they could crack the code. After early attempts at cold email outreach—in which they achieved a whopping *zero* percent response rate—the startup tried adding personalized, AI-generated messages. Their response rate jumped to 10 percent across their best email campaigns. Topline Pro now sends out a few thousand AI-generated messages per week, *per sales rep*. Once they receive a response from a prospect, the sales rep takes over the conversation.

Finally, Topline Pro uses AI to automate the customer experience. They use an AI-powered customer support chatbot that can answer their customer's questions 24/7. Topline Pro customers can interact with this chatbot via text. As of this writing, over 75,000 text messages have been exchanged between customers and chatbot without human intervention.

Ornitz and Kay are exemplary 10x Founders. They didn't let the outdated beliefs stop them going after a massive, fragmented market. They were right on the cutting edge of using generative AI and continue to improve their business functions with each new feature release. Instead of employing hundreds

of people, they are conquering a multi-billion-dollar industry with just a few dozen creative, versatile employees.

Scaling Founder-Led Support: Matt Mireles, TalkTastic

As a self-taught, "pseudo-technical" founder with a background in AI, Matt Mireles had a 10x Founder mindset long before the advent of ChatGPT. Now he has even more leverage to build exceptional customer experiences at scale.

Mireles' startup, TalkTastic, is developing a voice-first interface for computers. Ninety-six hours before launch, Mireles realized with dread that he had no customer support workflow in place. He didn't just want to tack on a traditional chat-based system; that type of customer experience was the exact thing he was trying to eliminate with TalkTastic. Mireles wanted to create a voice-first support system that was available 24/7, without hiring a team of support reps.

His elegant solution is worthy of an HBS case study on its own. When customers click on the support chat button, they are greeted by a friendly video from Mireles, who explains TalkTastic's recent updates and how to use their customer support system. Then customers are prompted to either leave a voice message or type out their question in a chat box using Typeform's VideoAsk tool.

Once a message is created, the voice file is fed into ChatGPT to be transcribed, then added to Intercom (which Mireles uses as their support system of record). Then the

message is fed into Anthropic's Claude AI, which writes out a personalized response and feeds it back into Intercom. In about five minutes, a customer receives a personalized message back, all without human intervention. ChatGPT also analyzes the customer message to determine if the issue is a bug. If it is, a new ticket is created in Linear (TalkTastic's project management tool) for triaging. This entire system is connected using the workflow automation tool Zapier.

Mireles built this video-first, AI-powered support workflow in just four hours, without writing a single line of code. It's not just a placeholder, either. Customers regularly praise TalkTastic's support experience, with one user saying, "The UI for feedback is stellar and is deserving of a product of its own."

TalkTastic's founder-led support model would have been impossible before the dawn of generative AI. A founder's time is precious, and as much as Mireles wants to help customers, he has other problems to address. He sees this AI-powered workflow as a step toward a future where founder-level, personalized support can be provided at scale, potentially even using AI avatars. "When I look at the brands today, they're increasingly about personalities. They're about people," Mireles explains. "You talk to the CEO, you feel like, 'Oh wow, okay, there's a human being here. I have a relationship,' and I believe it can lead to deeper loyalty and retention."

The startup world is quickly being divided into Old World and New World thinking. Old World thinking says that Mireles

has to settle for a chat-based support system because he doesn't have the time or resources to build something better. New World thinking—10x Founder thinking—says, "give me four hours and an LLM." Old World thinking says you need hundreds of salespeople, organized by region, to attack a fragmented industry. New World thinking says, "I can send personalized videos to thousands of prospects per week in just minutes."

I share these stories because it's hard to break out of the Old World mindset, even when you come into contact with the power of AI. We need to see 10x Founder thinking in action to fully understand the leverage we now have at our fingertips. These stories should inspire you to think bigger about using AI in your business.

Here is one more story to inspire you, this one from a friend's startup still in stealth mode. This founder recently lost his technical co-founder. In the past, that would have been an existential crisis. Today, though, my friend has opted to use ChatGPT to build his MVP. As he shared with me, "The result is that my burn rate is incredibly low, and velocity—the speed at which I can build and iterate on my product—has shot through the roof." He has been able to test out his initial hypotheses while searching for a new technical co-founder on the side.

Economists will try to measure the definitive impact of AI on entrepreneurs and economic productivity for years to come, but the early evidence is encouraging. In one study led by my HBS colleague Professor Rembrand Koning, high performing entrepreneurs in Kenya were able to improve their

business performance by 15 percent simply from AI *advice*. As the models get much better, that advice—and the reasoning behind it—will have an even greater impact.

Traits of a 10x Founder

Let's try to deconstruct the anatomy of a 10x Founder. What makes Nick Ornitz, Shannon Kay, Matt Mireles, and my stealth founder friend different? There are several traits they embody. I encourage every founder to emulate and develop them.

"Scaling Without Growing" Mindset

When I was a founder, I was obsessed with hiring. As soon as we secured more capital, we hired more people. If we closed another strategic partner, we hired. If we had a new product idea, we hired.

I've been an executive at successful B2B and B2C startups that scaled. I've been an investor and board member for hundreds of startups. In all cases, when things started to work and we hit product-market fit, we scaled rapidly because we hired rapidly. And we hired rapidly because we scaled rapidly. That era is over.

Going forward, founders will be more focused on deploying the right AI workflow than hiring teams of people to execute. Adobe executive Scott Belsky coined a new phrase and I like it. He wrote, "We are entering an era of *scaling without growing* . . . Every function of an organization will be

refactored in ways that allow small teams to scale their reach and ambition without growing headcount proportionately."[4]

Nick Ornitz and Shannon Kay clearly embody this scale-without-growth mindset. They are tackling a fragmented market at scale with under forty employees. Instead of hiring hundreds of sales development reps (SDRs) to perform cold outreach, they automate the sending of thousands of video messages per week using AI. Matt Mireles of TalkTastic is clearly cut from this cloth as well. He has scaled *himself* to deliver personalized, founder-led support to his customers. And while my founder friend isn't at scale yet, he chose not to hire an expensive technical co-founder in favor of building an MVP himself, using code generated by ChatGPT.

Modern AI tools, and particularly Agentic AI, have upended the traditional headcount needs in virtually every industry. 10x Founders must have strong strategic and managerial skills to deftly orchestrate their AI assets—and key human teammates—to scale rapidly without the massive employment overhead. (We'll dive deep into scaling product with AI co-pilots and agents in Chapter 7.)

AI-Forward and Obsessed with "Better"

At Flybridge, we invest in *AI-forward* startups. That doesn't necessarily mean AI is a core part of the product, but rather the organization is imbued with AI workflows to grow faster, leaner, and more profitably. 10x Founders maniacally re-evaluate and re-invent every part of their business as new capabilities come online. It requires an experimentation mindset

to try new tools, rapidly adopt those that make an impact, discard those that don't, and change your SOPs (Standard Operating Procedures) accordingly.

The bulk of this book is focused on refactoring each piece of your business model with AI tools and workflows: customer value proposition, go-to-market, tech & ops, and monetization. There are already dozens (or by the time you read this, hundreds) of AI tools in each of these categories. A friend of mine, the founder of a public software company in the sales and marketing space, tells me he's tracking forty-four companies that are building AI-powered SDRs. Building an AI-forward startup means you must be constantly on the lookout for new tools that will give you an edge.

As a former product manager, one tool that I'm particularly excited about is ChatPRD, created by an experienced PM named Claire Vo. ChatPRD is an on-demand Chief Product Officer that writes and improves product requirements documents (PRDs). PRDs are critical documents to convey the scope of a product to an engineering team, outlining the rationale for building as well as user experience goals and success metrics. It is often a laborious effort for founders and product leaders to write—thus, leveraging AI to save them time is a godsend.

Not all AI tools are going to survive, naturally. But if you wait until the dust settles, you will be leagues behind the 10x Founders who dove in head first and sorted through the slop themselves. Being AI-forward means being on the cutting edge, even when the future is unclear.

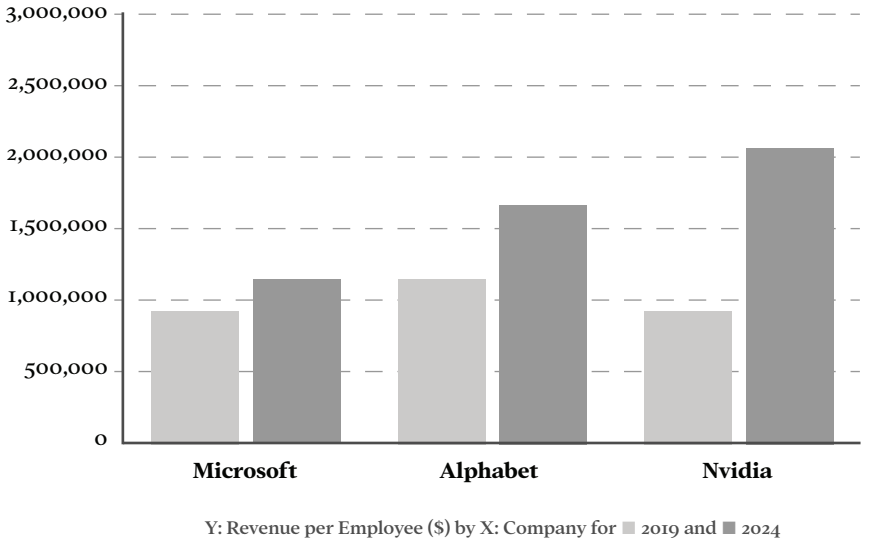
Focused on Profit and Efficiency

As a venture capitalist, I can't help but think of the financial implications of generative AI tools in the hands of 10x Founders. Next time a founder tells me they are going to spend their investment money on a team of support agents, I'm going to refer them to Matt Mireles and what he was able to accomplish in under four hours. If they can't comprehend how to use such a powerful form of leverage, they may not be long for the world of VC-backed startups. As an investor, it would be negligent for me not to back founders like Mireles who can get so much done in a fraction of the time and cost. Money will follow the founders who take full advantage of AI, and results will be close behind.

Generative AI is making software companies more profitable while requiring less capital. Some argue that these profits will disappear with more intense competition. In other words, the headwinds of competition and the lack of competitive moat in an AI age outweigh the tailwinds of operational efficiency. Those headwinds are real, but I'm not sure they're strong enough to slow down this productivity boom.

For a glimpse into the future, we can examine the most AI-forward organizations on the planet. At Flybridge, we created an "AI Index" to track the thirty public companies that stand to benefit the most from AI, focusing attention on the most innovative companies in the sector. In the years 2020–2024, a period of nascent AI tools adoption by these pioneering companies, the thirty companies saw massive productivity gains with median revenue per employee growth of 20%. We can see the specific numbers for three of these

AI leaders—Alphabet (Google's parent company), Microsoft, and NVIDIA—in the chart below.



Y: Revenue per Employee ($) by X: Company for 2019 and 2024

I would be shocked if we didn't see this positive effect on productivity ripple through other large organizations (finally defying the confounding Productivity Paradox of IT[5]). Klarna recently reported tremendous efficiency gains in using AI for customer service, with an AI assistant handling two-thirds of their chats. ServiceNow has mandated that every department provide an AI roadmap. The company's CEO is obsessed with using AI for process automation. He declared, "Any process that exists in the enterprise today will be reengineered—or engineered, depending on how messy the process is—with generative AI . . . Every workflow in every enterprise will be rethought."[6] Amazon CEO Andy Jassy shared in a LinkedIn

post that after their generative AI assistant, Amazon Q, was integrated into their internal systems, it saved the company 4,500 developer-years of work (Jassy noted, "Yes, that number is crazy, but real.") and $260 million in annualized efficiency gains. Alphabet CEO Sundar Pinchai recently reported that 25 percent of all new software code created by the company is being created by AI.

These productivity gains are so dramatic, and happened so quickly, that I believe these companies may have reached the point of peak employment. Going forward, all their revenue growth will be achieved with the same number of employees—or even fewer. We will have to wait and see.

No matter how innovative and determined, big companies are slower to adopt new processes than small companies. Culture and organizations are too entrenched and large groups of humans adapt slowly. Startups get to begin with a blank slate. 10x Founders are going to take that blank slate and make magic.

Balancing AI Efficiency with Real Risks

If it's not obvious by now, I am a techno-optimist. Gen AI offers immense potential for startups to accelerate their experimentation and innovation processes, yet it is important to acknowledge the risks and challenges associated with this powerful technology. Apart from some of the ethical implications (which we will cover in Chapter 10), this book won't explore many of these risks in depth; that is a complex and evolving topic that merits dedicated exploration. However,

you should be aware of them at a high level and consider how you can use these tools thoughtfully and responsibly.

Fighting Human Bias in AI Models

One of the primary concerns surrounding AI is the potential for human bias to permeate the models. As these models are trained on vast amounts of data from the Internet and other sources, they can inadvertently learn and perpetuate racist, sexist, bigoted, and hateful behavior we see online. This selective training set can lead to the proliferation of content and analyses that reinforce stereotypes or discriminate against certain groups. Startups must be aware of these risks and take steps to avoid propagating bias in their AI use.

There is a famous case of Amazon shutting down an AI-based recruiting tool a few years ago when they realized that it discriminated against female candidates. Their training data set? Résumés submitted to the company over a ten-year period. You can easily guess what gender the majority of those résumés represented, thereby creating a system that had an inherent gender bias due to the training data.

Biases in training data underscore the importance of transparency and *explainability*—the ability for an AI model to articulate how it developed an output. One of my portfolio companies, Zest AI, is a leader in AI-driven credit underwriting software. You can imagine how important it is for their customers—banks and credit unions—to have clear transparency and explainability on loan decisions that the model recommends to ensure fairness and regulatory compliance.

Privacy, Data Protection, and Copyright Infringement

AI models also raise concerns about privacy, data protection, and copyright infringement. As these models require vast amounts of data for training, there is a risk that sensitive or personal information could be inadvertently included or exposed. There is also the very real risk that copyrighted material will be co-opted without permission. *The New York Times* refers to the way AI companies have trained their models on copyrighted works as "the original sin of AI"[7] and has joined seven newspapers in suing OpenAI and Microsoft. Major record labels have also sued AI music generators. Start-ups must ensure robust data governance, security practices, and plagiarism checks to protect user privacy and comply with relevant regulations and copyright laws.

Malicious Applications and Security Breaches

We may not be wiped out by an AI supercomputer with a vendetta, but these tools in the hands of bad actors is a serious concern. Malicious users are already leveraging AI to generate fake news, deepfakes (computer-generated media that appears to be a real image or video), and other deceptive content, which can have severe consequences for individuals, organizations, and society. Furthermore, AI outputs are not perfect, and using AI for tasks such as code generation or business automation could introduce security vulnerabilities and other unintended consequences if not validated and monitored (we also have a portfolio company for that!). Weaponizing AI has become an area of concern—not only from

individual actors but also nation-states. Many are calling for more regulation and transparency of AI models. Those calls led the European Union to pass the first-ever legal framework to address the risks of AI in 2024.[8]

Environmental Impact

Finally, there's the environmental impact of training and deploying large-scale AI models. The computational resources required for these models demand significant energy consumption, which contributes to carbon emissions and climate change. A Carnegie Mellon University study estimated that generating one AI image takes as much energy as fully charging your smartphone.[9] The International Energy Agency projects that data centers' electricity consumption in 2026 will be double that of 2022.[10] As AI scales, there needs to be efforts to make its environmental footprint more sustainable.

The good news is that the most senior leaders of large AI companies, as well as senior government officials, are all very aware of these risks. From my conversations with many of them, I am confident these problems are being worked on assiduously. Further, the rise of open-source AI models can help mitigate some of the risks. Many leaders, like Meta's Mark Zuckerberg, have advocated for open-source models to provide greater transparency and avoid getting locked into one company or another's closed ecosystem.

One issue that we worry about at Harvard is whether our students will get complacent and use AI to answer questions and solve problems without digging deeper. In one of

my classroom conversations, I challenged a student on her answer to a question I posed and what supported her point of view. Her response? "That's what ChatGPT told me!" We can't allow AI to fully take the place of critical thinking and first principles understanding of issues and topics.

The pace of progress and improvement of these systems is hard to comprehend. Humans are strong linear thinkers. We are not great at exponential thinking. At a recent talk at Harvard, Sam Altman observed that it is far too easy to underestimate these models, and it will shock people "just how good these models are becoming" in the very near future. As of this writing, ChatGPT4o is the current state of the art (along with competing offerings from other software providers like Llama-3.3, Gemini 2.0, and Claude 3.5). By the time you read this, ChatGPT5 or even ChatGPT6 might be widely and freely available. These tools are simply getting better and better and better. One former OpenAI researcher forecasted in a June 2024 essay that based on the trendlines in computational power, algorithmic efficiency, and other advancements, super intelligence would be achieved by 2027.[11] Microsoft's top AI executive, Mustafa Suleyman, writes in his book *The Coming Wave*, "It's not just a tool or a platform but a transformative meta-technology, the technology behind technology and everything else, itself a maker of tools and platforms, not just a system but a generator of systems of any and all kinds."

Again, entrepreneurs would be well served to learn to harness these powerful systems now—recognizing that they will only get more and more powerful with time.

The Search for Product-Market Fit

10x Founders will use generative AI to rapidly experiment, iterate, and scale their startups. But executing quickly doesn't matter if you're aiming in the wrong direction. We need to talk about product-market fit, that crucial milestone on every startup's journey to success.

But is it a milestone? Or is it a more like a HUNCH?

Chapter 3

Having a HUNCH: Redefining Product-Market Fit

EVERY THANKSGIVING, Harvard Business School gives away free pies to faculty and staff. It's kind of a big deal. Eager administrators and professors, myself included, form lines out the door and down the sidewalk in front of the Chao Center on campus. Quantities are limited, so you risk missing out if you aren't timely (and then you might as well not show up to Thanksgiving dinner). Given it's late November in Boston, the temperature is anywhere from cold to *really* cold with a mix of wind, rain, sleet, or snow. Regardless, people always line up and wait for their pies.

Now I have a question for you: Does HBS have product-market fit (PMF) with their pies? The most common definition of PMF, from venture capitalist Marc Andreessen when he coined the phrase in 2007, leaves plenty of room for interpretation:

> *"Product/market fit means being in a good market with a product that can satisfy that market."*

Now, obviously a market comprised solely of HBS faculty and staff is a little small for a venture-backed startup. But the pies clearly satisfy the market. If they didn't, people wouldn't line up around the corner in terrible weather to get one. Still, this "business model" is missing some key components, such as revenue. Yet giving away your product for free is such a common strategy in Startupland that it's become a joke (Watch the episode "Bad Money" from the HBO show *Silicon Valley* for my favorite rendition of this schtick).

We will discuss the implications of "freemium" in Chapter 6: The 10x Club. For now, let's keep our focus on defining product-market fit: what is it, really, and how do you know when you have it?

Let's explore a slightly more relevant example of a startup in search of PMF to see if we can start to answer these questions. Who's ready to dance?

ClassPass: When Product-Market Fit Nearly Kills Your Business

Just like Squire, ClassPass was born out of frustration.[12]

For Payal Kadakia, it was the frustration of booking a fitness or dance class. Kadakia, the daughter of Indian immigrants, had a lifelong passion for dance, one she continued to pursue while attending MIT for mathematics and

operations management. She even founded an Indian fusion dance troupe as an undergrad. After graduating, she spent a stint in consulting at Bain & Company before progressing to a strategy and business development role at Warner Music Group in New York City.

It was during this period that Kadakia noticed how difficult it was to find and book dance and fitness classes. One night in 2010, after a fruitless search for a class, Kadakia hit her breaking point. "An hour later, I was so tired of searching, checking schedules, mapping, scrolling, and clicking to find the right class, I didn't even end up going to a class—simply out of frustration," said Kadakia. "I realized the problem: why isn't finding a class as easy as booking a reservation on OpenTable, or finding shoes on Zappos?" (OpenTable was a popular source of inspiration in the 2010s.)

Kadakia reached out to a childhood friend and fellow dancer, Sanjiv Sanghavi, who had also experienced the pain of booking classes in NYC. He decided to leave his Wall Street job to join Kadakia on her quest. In 2012, they launched Classtivity, a fitness studio search engine and online booking platform. Their promise to customers was compelling: finding a fitness class shouldn't be more difficult than taking one.

While the founders identified a painful problem, they struggled to put together the right solution. The search engine concept was a bust. As Sanghavi recalls, "People were searching for classes, but they weren't doing the thing we needed them to do to make any money—booking. We weren't really making any revenue."

(Classtivity had a popular product that couldn't be monetized. Sound familiar? It's safe to say that neither HBS's pie team, nor Classtivity at this stage, had product-market fit.)

Abandoning the search engine model, the team decided to emulate another red-hot startup of the day: Groupon. The coupon-based e-commerce company was one of the fastest-growing startups in history. If the concept worked broadly for small businesses and retailers, why wouldn't a specialized platform for fitness and dance classes be a hit? Classtivity created bundles of fitness "tickets" at various studios for a one-time flat fee. Studios opted in to give away these first classes for free with the hope that guests would convert into paying members.

The coupon-based model took off. By April 2013, Classtivity was hosting 15,000 listings in eight cities and had generated $50,000 in revenue. "We got more engagement with [the coupon bundle] in the first three or four days than we had with [the search engine] in six months," Sanghavi said.

But Classtivity's coupon model had the same issues that eventually toppled Groupon: Visitors did not convert into regular customers. Many of the coupon buyers were what Kadakia called "dabblers." "Our vision was to get you habituated to going to the same studio over and over again, but our customers were treating it like a one-month experience." For fitness studios, the value proposition quickly lost its luster. They were giving away free classes while Classtivity captured all the value. Many pulled out of the program. A two-sided marketplace does not have product-market fit if one side is not satisfied.

Classgoers, however, loved the product, and some even wanted to buy multi-month packages. This sparked yet another idea for Kadakia and Sanghavi: a subscription-based model that offered unlimited classes and shared revenue with studio owners.

Kadakia was hesitant to pivot yet again, but the coupon-based model was unsustainable. After some difficult conversations with her team (including, as she shared with me, an existential weekend executive team meeting), they decided to make the switch to monthly subscriptions. They also rebranded the company as ClassPass.

That's when things really took off. The company grew to 500 studio owners and thousands of users who generated 500,000 reservations in just a few months.[13] Classgoers loved the simple subscription model and studio owners were making their fair share.

So was this the moment that ClassPass found product-market fit? They had found a good market and created a product that satisfied *both* sides of the market, and they grew rapidly as a result.

Not quite. ClassPass ran into another existential problem: Their most active customers were killing the company. ClassPass collected a fixed monthly fee from users, but their costs were variable. Every time a user took a class, ClassPass dutifully paid the gym its fee. A small percentage of power users took dozens of classes per month and were costing the company money. The more classes that users attended, the worse the unit economics became.

Ironically, fitness studios faced the same issue: Their most active users cost them the most money. All the profit is made on users who don't attend classes, so gyms oversell subscriptions and pack their classes to discourage people from attending. This business model was anathema to Kadakia's original vision. As she wrote in a blog post to her community in 2017: "The impact on our business was unsustainable . . . we'd be sabotaging the vision at the very heart of this company."

So the startup made yet another change to their business model by introducing price tiers and getting rid of unlimited classes. Now, everyone was happy: variety-seeking fitness enthusiasts were still signing up and happy to pay a bit more, studios now had regular customers, and ClassPass no longer had to worry about growth negatively affecting their profitability. The company went on to grow substantially, raise hundreds of millions of dollars, and was acquired by Mindbody for a reported $1 billion in 2021. The combined Mindbody ClassPass is expected to reach $500 million in revenue in 2024.[14]

Levels of Product-Market Fit

The ClassPass case study shows the limitations in the way we traditionally define product-market fit—namely, it's defined too narrowly and viewed as a one-time milestone. We talk about startups as pre-PMF and post-PMF, but the reality is that PMF is an ongoing process. All companies are in search of *stronger* product-market fit at all times. ClassPass (and Classtivity before it) showed signs of PMF at every stage, but

the founders continued to experiment to find a better business model, eventually landing on a non-obvious solution that became extremely successful.

We need a better definition of product-market fit that is more comprehensive and more quantifiable. Why? Because the only thing more dangerous than not finding PMF is *thinking* you have PMF and scaling prematurely. If Kadakia and her team had chosen to pursue the coupon model (after all, it was selling well), it's hard to say if they would have survived. Time is your most valuable resource; you can't waste it chasing dead-end ideas.

First Round Capital created a four-stage definition of PMF that better fits the more dynamic reality for startups:[15]

1. *Nascent*: You have a handful of somewhat engaged and happy initial customers, but things still feel early and messy.

2. *Developing*: You have more engaged, paying customers and less churn—you need to work on driving demand.

3. *Strong*: Momentum is picking up and you're finally feeling the "pull" of demand. It's time to focus on increasing efficiency.

4. *Extreme*: You're repeatedly and efficiently solving an urgent problem for a large number of customers who need your product.

ClassPass went through each of these four stages of PMF:

1. Nascent: Classtivity search engine
2. Developing: Classtivity coupons
3. Strong: ClassPass Unlimited Subscription
4. Extreme: ClassPass subscription tiers

Calling yourself post-PMF can lull you into contentment and put you at risk of optimizing for the wrong business model. Recognize that you can always increase the strength of your product-market fit and should continue experimenting.

But these levels only get us halfway there to a better definition of PMF. We also need to evaluate our startups across a broad set of metrics. In other words, we need a HUNCH.

HUNCH Metrics for Defining Product-Market Fit

Many startup founders and investors use customer demand as a simulacrum of product-market fit. But HBS's pie giveaway and ClassPass's unlimited subscription model prove that demand is only part of the equation. In my classroom and with our portfolio companies, I define product-market fit as having a HUNCH.

HUNCH is an acronym for five key metrics that comprehensively test for product-market fit:

- **H**air-on-Fire Customer Value Proposition (as defined by the 40 percent test)
- **U**sage High
- **N**et Promoter Score
- **C**hurn Low
- **H**igh LTV:CAC Ratio

There are benchmarks for each of these metrics to help you define which level of product-market fit you've achieved, from Nascent to Extreme. I'll share those benchmarks at the end of the chapter. For now, let's talk more about each of the HUNCH metrics:

H—*Hair—on-Fire: Customer Value Proposition (The 40 Percent Test)*

How badly does your customer need your product? The first priority in finding PMF is uncovering a problem so urgent, it's like your customer's hair is on fire.

Michael Seibel of Y Combinator likes to jokingly extend the metaphor: "If your friend was standing next to you and their hair was on fire . . . it wouldn't matter if they were hungry, just suffered a bad breakup, or were running late to a meeting . . . they'd prioritize putting that fire out . . . If you handed them a brick, they would try to hit themselves on the head to put out the fire. You need to find problems so dire that users are willing to try half-baked, V1, imperfect solutions."

> *A Customer Value Proposition (CVP) is your unique solution to a painful problem for a specific target customer. It's WHO buys from you, WHAT they buy, and HOW you deliver it.*

We'll cover exactly how to experiment your way to a strong CVP in Chapter 4. For now, let's discuss it as a key indicator of product-market fit. How do you quantify the strength of your CVP? Before you launch your product, all you have are hypotheses. But customer discovery and research-driven ideation can help.

Here is a question I encourage founders to ask target customers during customer discovery: "If this product existed, would it become a top-two priority for you to evaluate?" It's not just about whether or not they would try the product. Given time and budget constraints, what would the user stop doing—or stop purchasing—in order to free up time and budget to try your product or service? No one has time for priorities number three and four!

But you can only learn so much from customer interviews. This is why so many smart people recommend creating a minimal viable product, or MVP; the faster you get a product into customers' hands, the faster you will learn what is working (and not working). Measuring the strength of your CVP becomes much more quantifiable once you have a product in the world. Sean Ellis, an entrepreneur and growth marketer, created a brilliantly elegant experiment to test this. It's simply called the 40 Percent Test. It's a one-question survey to existing users:

How would you feel if you could no longer use this product?

a. *Very disappointed*
b. *Somewhat disappointed*
c. *Not disappointed*
d. *I no longer use this product*

Then you measure the percentage of users who answered "very disappointed." After benchmarking over 100 startups, Ellis determined that 40 percent is the magic number that determines a strong CVP (I will put this number in the context of PMF levels later in the chapter).

Superhuman, the email productivity app, successfully used the 40 Percent Test to iterate on their early product.[16] When founder Rahul Vohra first surveyed their users in early 2017, only 22 percent answered "very disappointed." But when Vohra looked into the data, he noticed something interesting: The users who answered "very disappointed" were mostly startup founders, executives, business development professionals, and managers. These personas were Superhuman's best customers—businesspeople who "lived" in their email inboxes. When filtering the data by these personas, 33 percent answered "very disappointed" to the question—a massive leap. Vohra and his team narrowed their focus to these target customers. They asked three more follow-up questions:

- *What type of people do you think would most benefit from Superhuman?*
- *What is the main benefit you receive from Superhuman?*
- *How can we improve Superhuman for you?*

The answers to these questions became Superhuman's roadmap. They doubled down on what their target customers loved most—speed, keyboard shortcuts, and focused workflow—and built features that would make Superhuman even better: a mobile app, more integrations, and improved attachment handling. In just three quarters, Superhuman's survey results jumped from 33 percent to 58 percent—almost doubling and being far beyond the 40 percent threshold. In 2021, the company raised a financing that valued them at $825 million.[17]

Measuring the strength of your CVP is the strongest single indicator of product-market fit, but it's not sufficient on its own. Let's move on to the next HUNCH metric: Usage Rate.

U—*Usage High: The Toothbrush Test*

Usage refers to how often your target customers use your product or service. The higher the frequency, the better. Google co-founder Larry Page coined a memorable way to think of products that have routine usage: the toothbrush test. When evaluating products to build or acquire, Page would always ask whether the product would be used once or twice a day, like a toothbrush.

The metrics used to measure usage vary widely across industries. Social media platforms and software products often use Daily Active Users (DAUs) and Monthly Active Users (MAUs). Video platforms like Netflix, YouTube, and TikTok not only measure DAUs and MAUs, but also minutes spent viewing content. ClassPass measures usage by the number of classes taken per user.

Usage is a good real-time indicator of product-market fit because you can measure it faster than monthly subscription revenue. As of December 2024, OpenAI reported having 300 million weekly active users (WAUs) on its platform.[18] If that number drops to 290 million next week, internal and external stakeholders would raise the alarm because it could eventually lead to a drop in monthly subscribers. Video platforms like Netflix are keenly aware of their usage rates because a dip could mean more cancellations in the coming months.

High usage is almost always a good thing, particularly when your users are completing what venture capitalist Sarah Tavel calls the "core action" — the key behavior that leads to repeated value for both the user and the business. If your unit economics are off, there may be user value but not business value in that core action. This is what happened to ClassPass when they offered unlimited classes. Power users drove up costs for the company, which hurt their profitability. That is why you should never rely on usage rate as a measure of PMF without also considering the other HUNCH metrics as well.

N—*Net Promoter Score (NPS): Building Word of Mouth*

Many of the most successful startups grow organically with little to no paid marketing. This is often called "going viral"

or simply word-of-mouth marketing. Think TikTok, Airbnb, and recently, ChatGPT. OpenAI did not run a massive, coordinated marketing campaign to promote their little chatbot. (I say "little" affectionately; ChatGPT was never meant to be a huge hit.) But once people started using ChatGPT, they couldn't stop talking about it. B2B startups can also go viral; Slack and Notion are two excellent examples.

One way to estimate organic growth is with the net promoter score (NPS). Specifically, NPS measures your customer's willingness to recommend your company to friends and colleagues. The higher your NPS, the more likely you are to grow organically via word of mouth. NPS is measured by asking customers how likely they are to recommend the product on a scale from 0 to 10. After collecting all the responses, you categorize the high scores (9s and 10s) as promoters, the low scores (0–6) as detractors, and the 7s and 8s as passives. You then subtract the percentage of detractors from the percentage of promoters to get your final score. For example, if 20 percent of your customers are detractors and 75 percent are promoters, your NPS is 55 (very good).

NPS can only be measured post-launch, and critics argue that it's not all that useful. After all, what good is measuring a customer's *likelihood* to recommend your product? Measuring actual customer referrals is always preferred, but referral programs are clunky to set up and have innate flaws of their own. That is why I recommend measuring product-market fit across multiple metrics, not just one.

Speaking of flaws, virality isn't a sure sign of startup success either. I bet you can think of multiple "viral" startups

that disappeared as quickly as they arrived: Clubhouse, Vine, Fab.com, Groupon, and countless others. Virality should not be the only growth strategy you rely on for success. It's always better as icing on the cake; and ideally, it's built on top of an excellent product and customer experience.

Technically, any net promoter scores above 0 is good because it means you have more promoters than detractors. But startups need as much good word of mouth as possible. I recommend founders shoot for NPS between 40–70—challenging, but doable. For comparison, Amazon is reported to have an NPS of 49 with 66 percent of those surveyed considered promoters and 17 percent considered detractors. That's an excellent score for a $2 trillion company. Netflix's NPS score is 45 as of this writing. The average NPS for companies in the United States is 36 according to Qualtrics.[19]

C—*Churn Low: Getting Customers to Stick Around*

Churn is an essential metric for a recurring revenue business, such as subscription SaaS companies like HubSpot or membership companies like ClassPass. As a startup searches for product-market fit, churn is an indicator of a product's ongoing ability to meet customer needs. The higher your churn rate, the more customers you are losing each payment period. That means you have to replace those customers just to break even, which puts enormous pressure on your customer acquisition funnel.

The dangerous thing about churn is that it's a *lagging indicator* of customer behavior. Once a customer cancels their

subscription, it's too late to win them back. Usage rate is a leading indicator and can often help you predict which way your churn is trending. Churn is best used as a historical analysis tool. I highly recommend measuring churn based on *customer cohort*, or a group of customers that all sign up for your product within the same payment period. Then you can track your churn rate per cohort over time to see the effect of your product changes. If you see your churn rate flattening over time, that's a good sign. (For a deep dive on cohort analysis, visit the appendix.)

Churn rate benchmarks depend on your market. If your customers are large enterprises, your churn rate should be very low—ideally 1 percent or less per month. If your customers are small businesses, only 2 percent or less per month. For consumer businesses, shoot for 3–4 percent or less per month.

In addition, businesses should track both gross churn and net churn. Gross churn measures the percentage of total customers or total revenue lost during a specific period and does not account for revenue gained from existing customers through new or upsell revenue (the numbers I shared above are gross churn). Net churn adjusts for the revenue gained from upsells and new customers. Related to net churn is net dollar retention (NDR), or the total revenue gained from existing accounts.

MongoDB, a database software vendor and Flybridge portfolio company, has an outstanding NDR of 120 percent. That means revenue from existing customers is growing by 20 percent or more. Snowflake has an even better NDR at 130 percent. For both companies, there is a natural growth engine

for their customers using more data or more applications—a magical phenomenon also known as "negative churn." This is a sign of extreme product-market fit.

H—*High LTV:CAC Ratio: Perfecting the Business Model*

Let's talk about ClassPass again. After switching to the subscription model with unlimited classes, the startup took off like a rocket. But the business model still had a fatal flaw: Their best customers were costing the company money by taking too many classes. Specifically, these customers were hurting the startup's *unit economics*, or their ability to balance costs and revenue.

You could have the most beloved, high-usage, viral, sticky product on the planet, but if your costs are higher than your revenue, you will go out of business. That is why I tell students and founders that "traditional" product-market fit is necessary *but not sufficient* for startup success. You need an efficient business model, which should be a consideration when evaluating the strength of your PMF.

The final HUNCH metric takes into account the unit economics of your business: Customer Lifetime Value (LTV) and Customer Acquisition Cost (CAC). In short, how much is each customer worth (revenue minus costs), and how much does it cost to acquire them (sales and marketing)? LTV and CAC are typically expressed as a ratio: LTV:CAC.

ClassPass had an LTV:CAC problem. Given their business model construct, power users were driving up the company costs, hurting the LTV (which is a function of profit, not revenue) and forcing the startup to raise prices. This made it harder to attract customers, which increased their CAC. Churn increased at the same time due to higher prices, which hurt LTV even more. This created a negative flywheel effect that would eventually kill ClassPass.

Generally speaking, a healthy LTV:CAC ratio is 3:1 or higher. If a customer is worth $1,500, then you can spend up to $500 on sales and marketing and be comfortably profitable. When ClassPass switched to the unlimited subscription model, their LTV:CAC dropped to 2.8 and was getting worse every day. This metric made it clear to Kadakia that they needed to change the business model.

But there is no perfect metric for measuring PMF—not even LTV:CAC. How you measure lifetime value can dramatically change your ratio and lead you astray. We'll discuss these nuances in Chapter 6.

Benchmarking for Product-Market Fit

The search for product-market fit is a journey, not a one-time milestone. Your focus should be on continuously strengthening your PMF and experimenting with ways to improve each HUNCH metric.

The following are general benchmarks for measuring the strength of product-market fit at each level:

	Nascent	Developing	Strong	Extreme
Hair on Fire CVP (40% test)	20%	30%	40%	50%
Usage High	Varies by company and industry			
Net Promoter Score	40	50	60	70
Churn Low	**B2C:** 8%/Month **B2B:** 5%/Month	6%/Month 3%/Month	4%/Month 1%/Month	2%/Month Neg. Churn
High LTV: CAC	2:1	3:1	4:1	5:1

HUNCH Benchmarks at each stage of Product-Market Fit

Again, these benchmarks are generalized across industries, but they're a good place to start. When you commit to improving each metric through experimentation, amazing things can happen. One of my portfolio companies boasts an NPS score of 84, a twelve-month net dollar retention of 166 percent, and an LTV:CAC ratio of 25x. That is clearly extreme product-market fit! It's no wonder they have received numerous term sheets from top investors in the last year.

Another one of my portfolio company founders recently conducted the 40 Percent Test and proudly wrote to tell me about it. She surveyed her customers and 89 percent of respondents indicated they would be Very Disappointed if they couldn't use her product anymore—more than doubling the 40 percent threshold set by Sean Ellis.

The search for product-market fit has not changed in the age of AI—it has only accelerated. 10x Founders have the tools to build, measure, learn, and iterate faster than ever. This fact makes your experiment selection all the more crucial.

Whether you're building B2B SaaS or rocket ships, your journey to PMF and startup success starts with nailing your customer value proposition.