



Is There a Scientific Formula For Start-up Success?

Founders make fewer mistakes and pivot in the right direction when they learn to challenge their own assumptions and experiment continuously.

Even in the best of times, starting a business is like running a marathon with the **odds stacked against you**. In a global recession, you also have to endure the headwinds of reduced consumer spending and more selective investors. If legs of steel were essential before, they are absolutely critical now. You may also need a new strategy.

Many start-up founders swear by the Lean Startup method, popularised by serial entrepreneur and software engineer Eric Ries in a 2011 book of the same name and taught in business schools and accelerators around the world. The method entails finding out customers' problems and needs, obtaining feedback and building a minimum viable product (MVP) to test demand. The idea is to learn quickly and iteratively through experimentation and feedback, and quitting or pivoting when the original idea falls through.

But there is a way to improve the Lean method itself. In a **randomised controlled trial** involving 116 early-stage start-ups, my colleagues* and I show how training founders to think like scientists could reduce the risk of failure. Our study, featured in an **article** published in the *Harvard Business Review*, found that entrepreneurs who were taught to formulate hypotheses from **theories** and rigorously test them on samples of potential customers were more likely to acknowledge that an idea was bad, as

well as to exit or pivot from non-starters or pitfalls. They also generated more revenue than the control group.

How to think like a scientist

We partnered with two start-up schools to create a training programme based on the Lean Startup method. Early-stage start-ups – those with only a business model in mind, or whose founders had just begun to work on their idea – were invited to enrol in our training programme for free. Due to resource constraints, we selected just 116 of the 164 that applied. They were randomly assigned to either the treatment or the control group.

Over the next four months, both treatment and control groups separately attended five lectures and five coaching sessions with a mentor. All of them were taught the Lean Startup essentials: draw up a **“business model canvas”**, conduct behavioural customer interviews, create a minimum viable product or service, and test customers' responses to it with experiments or quasi-experimental data.

While that's all that the control group learned, the treatment group was also trained to apply a scientific approach to the Lean method. First, they re-examined their business idea by using **first-principles** thinking to identify

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assumptions and leaps of faith. Then, they examined the relationships among the components (“value propositions”, “cost structure” and so on) of their business model canvas and assessed the entire model holistically. They were also trained to collect evidence through robustly designed experiments and rigorous data analysis, as well as to articulate decision rules at the start of their experiments or interviews that would help them stay the course – or change direction.

This structured, scientific approach helped the treatment start-ups search for and analyse market signals more objectively. It reduced the likelihood of false positives (bad ideas being mistakenly accepted) and false negatives (good ideas getting rejected). Taking these steps early in the entrepreneurial journey can have an enduring impact on decisions downstream.

Over the course of the four-month training and for 10 months after, we conducted a total of 16 phone interviews (observations) with each start-up. For the 44 that dropped out, interviews were conducted up to the point they exited. Compared to the control group, the treatment group had more dropouts (24 vs. 20) and more pivots (19 vs. 11). They also earned more revenue: We recorded 85 positive revenue observations in the treatment group compared to 22 in the control group over a one-year period. Average and median revenue reached €7,800 and €1,300 respectively in the treatment group, versus €900 and €500 in the control.

How to (thoroughly) test an idea

One start-up in our treatment group illustrates how the scientific approach can improve entrepreneurial decision making. The three co-founders of the start-up, a scooter-sharing service called **MiMoto**, originally planned to offer sturdy electric scooters for rent to college students in Milan, based on their own experience commuting to school and study trips to San Francisco, Mexico City and Barcelona.

Then, in late 2015, the founders signed up for our start-up training and were introduced to the scientific approach to the Lean method. Applying what they learned about unravelling assumptions and testing their business model by way of falsifiable hypotheses, MiMoto’s founders conducted an experiment with 600 university students. Participants were randomly assigned to try one of 10 scooter models and interviewed on their willingness to use a scooter-sharing service, as well as which model they favoured.

It turned out that most college students thought public transportation was just as convenient and cheaper than using a scooter-sharing service. Participants, especially women, also didn’t like

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MiMoto’s proposed three-wheeled scooters, finding them unwieldy. This could be the reason why Milan’s first scooter-sharing service **Enjoy**, which catered to working commuters with a fleet of three-wheelers, failed to gain traction. (The service was terminated in July 2017, just two years after it was launched.)

MiMoto’s survey did, however, suggest that nimble scooters would appeal to commuters who needed to navigate Milan’s congested roads in a hurry. So the founders pivoted in this direction. They generated new hypotheses and tested them. They narrowed down the various likely customer demographics and refined scooter prototypes until they had an MVP and had identified a promising customer source: young professionals who wanted a flexible and fast way to travel around Milan and were willing to pay for it.

Applying the scientific approach to the Lean method took time, and MiMoto’s launch was pushed back by a full two years to October 2017. But the founders’ efforts have paid off: MiMoto has raised more than €1 million and expanded to Turin, Genoa and Florence. More than 70,000 users have signed up with the service, whose 600 lightweight scooters are each booked an average of three times a day.

MiMoto’s founders recently agreed to **sell the company** to New York-based Helbiz, a fellow environment-friendly mobility start-up, contingent on the latter’s successful listing on Nasdaq. The companies are merging their fleets of electric two-wheelers – mopeds, bicycles and e-scooters – putting the combined entity in market-leading position in Italy, with plans to expand to cities in Europe and the United States.

MiMoto has enjoyed early success in its start-up journey by applying the scientific approach to the Lean method. In times of scarcity, such a strategy could be more than a shot in the arm for start-ups – it might well be a matter of necessity.

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