Why Do Startups Fail? Because Hardware is Hard

wired.com/story/why-do-startups-fail-because-hardware-is-hard

Erin Griffith

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Few venture-capital investors have forgotten the story of Pebble: In 2012, after every VC firm on Sand Hill Road had passed on investing, the smartwatch startup raised more than $10 million on crowdfunding site Kickstarter. It was an unheard-of amount for a crowdfunding campaign, and the resulting hype made Pebble an internet sensation. Then the VCs, suffering from FOMO, begged Pebble to let them invest. The startup eventually raised a total of $59 million.

Investors have been loath to repeat the mistake ever since. Venture funding for hardware startups hit an eight-year high in 2016, with investors pouring $4.4 billion into 624 startups, according to data provider CB Insights.

Likewise, hardware entrepreneurs are eager to use a successful crowdfunding campaign as evidence of customer demand for their product. If tens of thousands of people are willing to donate money or pre-order a product that doesn't yet exist, surely millions will want to buy it in a store, the thinking goes. More than half of gadget startups raised their first funding on a crowdfunding website, according to CB Insights.

But it takes time and a lot of money to bring hardware to market, and in the last year a number of well-funded hardware startups have flamed out spectacularly. Wearable startup Jawbone, backed by $930 million, sold its assets earlier this year. E-cigarette company Njoy, backed by $181 million, went bankrupt last year and liquidated its assets. Kitchen appliance maker Juicero, backed by $100 million, shut down over the summer. And Fuhu, a tablet startup; Zeebo, a gaming console; and Hello, a sleep tracker; which each raised more than $50 million, have ceased operations.

Amid the failures, it's increasingly clear that crowdfunding success does not automatically equate to widespread consumer demand. A new study from CB Insights analyzes the failures of 382 hardware startups, finding that the biggest reason they fail is a lack of demand for their products. In other words, a popular crowdfunding project can be deceptive. According to the report:

> Startups are likely raising money to get to a limited release stage, and then finding that there is not a large enough market for their product to justify a larger raise and production at scale.

The study cites overspending as the second reason for failure and waning interest after an initial crowdfunding campaign as the third. On the surface, the reasons aren't too different from the reasons all startups fail. A prior report from CB Insights found that the top reason unsuccessful startup founders believe their companies failed is the lack of a market need for their product.

That may seem obvious, but the cult of entrepreneurship encourages startup founders to ignore signs that their idea won't work. Building the future around one's own vision requires a bit of irrationality. Startup mythology largely ignores failures, in favor of the rarer successes. As Steve Jobs famously said, "A lot of times, people don't know what they want until you show it to them.”

It's an inspirational idea, but most startups fail to live up to it. Crowdfunding exacerbates this problem of false hope, making customer demand appear stronger than it actually is. Investors wowed by buzzy crowdfunding campaigns would do well to remember how the Pebble story ended: In December 2016, the startup shut down, selling its assets to competitor Fitbit.

The 5 reasons why hardware startups fail

techinasia.com/talk/5-reasons-hardware-startups-fail

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Daniel Ellis · 18 Jul 2016

On July 7, 2016, Theranos CEO Elizabeth Holmes was barred from owning or running a laboratory for two years. Theranos also had its licence to operate its laboratory in California revoked.

This highly consequential decision by the US government regulator, hot on the heels of Forbes' downgrade of Theranos' valuation from $9 billion to $800 million and Ms Holmes' own net worth to zero, should come as no surprise. The company has been struggling to maintain its credibility since October 2015, when its practices and technology was first brought into question by the WSJ.

As Ms Holmes' problems mounted, she famously paraphrased Gandhi by saying, "First they think you're crazy, then they fight you, and then all of the sudden you change the world."

It seems not that long ago that Theranos was held up as the shining example of a hardware startup taking on a big, established industry. It's the latest in a series of high profile hardware startup failures that includes Coolest Cooler, Zano, Makerbot, Pirate 3D, Novelsys and Better Place. There are many others. Too many to mention in one article.

But why look into failures?

Surely there are many more success stories like Tesla, Xiaomi, and Raspberry Pi that one can rather strive to emulate?

Not so simple!

Reason being that when it comes to hardware startups, the challenges seems to be remarkably similar; for failed companies and successful ones alike. Not just that, it transcends geography and industries.

Unfortunately, mistakes tend to only reveal themselves after a startup fails, so those are the best places to look in order dissect, learn from them, and create future success.

> "At some point, everything's gonna go South on you. You're going to say 'This is it… this is how I end.' Now, you can either accept that, or you can get to work. You solve one problem, and then you solve the next problem, and the next, and if you solve enough problems, you get to go home." – Mark Watney (as played by Matt Damon in the movie The Martian)

Not all failures are created equal

Prof. Amy C. Edmondson from Harvard Business School wrote an article in 2011 that asserts not all failures are equal. She splits them up into three categories:

- Preventable failures in predictable operations
- Unavoidable failures in complex systems
- Intelligent failures at the frontier (or rather… happy accidents)

In this series, I'll be looking more deeply at five overarching, preventable failures, the lessons to learn from them and the skills needed to either avoid or recover from them.

Over the next few weeks I'll be working through detailed case studies and conduct interviews to help break down and analyse the biggest challenges hardware startups face and if circumstances makes them unavoidable, look at options how to overcome them.

Unlike most similar type articles, I'll delve deep into each topic to be as comprehensive and thorough as possible. Keep in mind that although this series focus on hardware startups, the business lessons to be learned is helpful for all founders.

Without further delay, here are the 5 reasons hardware startups fail, in no particular order.

1. Engineering/technical design issues

Here I'll show how technical issues, bad product decisions, over-promising and too many changes can delay or derail a project completely.

I'll also look at the type of testing you should be doing at each project phase.

2. Superiority bias

The traits of the typical entrepreneur can, in many cases, be seen as overconfidence, arrogance, naivety or unemployability. These traits can be either a boon or a bane for the project and the company as a whole.

We'll show how to recognize and manage said traits to further increase chances of success.

3. Timing problems

Not the dark magic many people think it is. I'll provide you with the checklist to be more sure whether the timing for your concept is right or not.

I'll also use case studies to illustrate where timing has made a deciding difference in the success of a product.

4. Poor execution

Execution can refer to Operations and Decision making or Internal Admin and Regulation. I'll discuss both separately.

I'll discuss the commercialization process in detail and point out the various pitfalls along the way. The administrative process, often seen like a necessary evil when it fact, it being a structure that supports your project and company, is a strong indicator of future business success.

5. Insufficient funding

The one we obsess most about and so very often get horribly wrong.

I'll discuss the various options of funding available to hardware startups and elaborate on ones that spare you from giving away too much equity to make your dreams come true. I'll also show you how to prepare a budget for a hardware project and work through a sample product.

There are many other reasons startups fail, but speaking from my own experience and research, these are the ones that present the highest risk that are at the same time, manageable. While I do not claim to be an expert in each of these issues, I will take the necessary effort to include data, case studies and expert opinions.

Please join in the discussion and share your own experiences. Let us all learn from each other.

This article is the first of 'The Hardware Series', where the author covers in detail why hardware startups fail.

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