The 5 reasons why hardware startups fail

 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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Daniel J Ellis is firstly, trained in financial management and accounting, and secondly, a tech geek who loves playing with the latest technologies and electronics boards.