

The Effect of Tech Startup Culture on the Development of Technology

The term 'Startup' evokes images of young professionals in open plan offices, bean bags, table tennis and names with vowels missing. In 2018, the number of new technology firms started in the UK grew by 14%. This represents 4,238 new companies in London alone [1]. In the US, technology based Startup firms have increased in number by 47% in the last decade [2]. Startups are an ideal vehicle for emergence of new technology and innovation, at least according to their advertisements. Some tech Startups have been valued in the billions. This money is usually sourced from venture capital funds, such as Softbanks Vision fund, the largest private equity fund in the world, worth over \$100 billion [3]. With this sort of capital at their disposal, what breakthroughs have been made? From Business Insiders list of 61 most innovative Startups [4], here are some encouraging examples.

1928 Diagnostic is a Swedish biotech company whose main product is a cloud service that analyses resistance markers in bacterial samples. Their stated mission is to fight antibiotic resistant bacteria outbreaks around the globe. Their products include software tools to analyse and track resistance markers (genes that can give bacteria antibiotic resistance), track and predict the spread of such bacteria and even plan preventative measures [5]. With antibiotic resistance diseases on the rise, such tools may prove invaluable in the fight against them. The company was founded in 2014 and is currently funded to the sum of \$11.1 million [6].

London based IoT firm EVERYTHING has implemented a platform to track consumer products throughout their supply chain. This can allow companies to better manage their supply chains, increasing efficiency, reducing waste and increasing recycling [7]. Global 'Just in Time' supply chains are now common in large companies such as Samsung and Amazon. EVERYTHING aims to make such supply chains more accessible to smaller businesses. The company was founded in 2011 and has been funded to the sum of \$41.3M [8].

Peloton Technology is an automated vehicle technology company based in California. Aimed at reducing fuel use in the US trucking industry, their flagship product is PLATOONPRO, a vehicle to vehicle communication system that allows one lorry to automatically follow another at a safe distance. This practice is called platooning and saves fuel by reducing drag. The lead lorry can save 4.5% in fuel and the follow up to 10%. Automatic braking and acceleration can also increase safety and negate many crash risks in trucking [9]. The company was founded in 2011 and has been funded \$78.4M [10].

Examples of successful and innovative Startups such as these are encouraging. They have taken great ideas and created successful businesses tackling global issues with technology. However, is there a dark side to the tech Startup culture? As the main source of funding for many of these companies is venture capital, their goals are of course different from government funded research as conducted at universities and other institutions. The drive to make a quick profit and gain more investment is not always compatible with technological advancement. A more pessimistic article by CBInsights lists 189 of the most costly failed Startup venture of the last decade [11].

Singulex was a commercial stage in vitro diagnostics company. In 2006 Singulex discovered that 'high sensitivity assays can detect cardiac troponin in the blood of practically all healthy humans [12]'. This was a significant discovery in the field of heart disease diagnostics and prevention, a hugely important medical field, as heart disease is one of the biggest killers. After several rounds of funding,

the firm raised a disclosed total of \$219M. However, on January 18th 2018, the firm was charged with violating the False Claims Act (FCA) by paying doctors to refer patients to their services. For this they were fined \$114M [13]. The company closed its doors permanently on June 28th the following year [14].

A notorious and widely mocked example of tech Startup failure is the Juicero. The company was founded by Doug Evans in 2016 and raised \$120M in capital funding [15], [16]. This £350 WI-FI connected juicer was sold as the perfect solution for getting healthy, fresh pressed juice in your own home. Users had to first purchase the appliance and then 'produce packs' of pre chopped fruits and vegetables from Mr Evans's company (for \$5-8 each). The produce packs are then placed inside the machine and your juice is squeezed out by a complex mechanical system claiming to exert enough pressure to lift two cars. It was quickly revealed in a video by Bloomberg News [17] that these bags could be squeezed by anyone using just their hands. The company became something of a laughingstock and collapsed in September 2017. As amusing as this is, it begs the question: what happened to the \$120M? More importantly, how could that money be better spent.

In conclusion, a number of successful and not so successful Tech Startups have been discussed. The successes of 1928 Diagnostic to the miserable failure of Juicero. The culture of Tech Startups can produce amazing technology in many different fields, but it must be carefully regulated. With lack of oversight from government and other institutions, the insider culture of investment can result in vast resources being dedicated to solutions to imaginary problems required by no one. Humanity is facing many issues of resources and it is time to look at our waste before it is too late.

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