

# The Dos and Don'ts of Starting a Startup Company

Presented by Jordan Olear

MECE 5397: Engineering Innovation and Entrepreneurship

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# Introduction

- **Startup** a young company founded by one or more entrepreneurs to develop a unique product or service and bring it to market
- **2018**: 30.2 million small businesses in the United States
- <sup>3</sup> Stages in Startup Life Cycle:
  - 1. Bootstrapping Stage: Entrepreneur sets the foundation for their business by getting small forms of investments
  - 2. Seed Stage: Entrepreneur solidifies a team to accelerate the business' progress; a lot of startups fail in this stage
  - 3. Creation Stage: The business enters the market and begins selling products; at the end of this stage an organization/firm is formed



# Dos and Don'ts for Startups

Do	Don't
Have a mentor	Ignore available resources
Have a diverse team	Work alone
Have an aggressive attitude	Have a static mindset
Focus on societal impact	Focus on financial achievement
Acquire investments	Limit loan requests to one single entity
Fail quickly, so you can consider other ideas	Give up

# Successful Startups

• Uber

- Founders: Travis Kalanick and Garrett Camp
- Launched: 2010
- Creation Time: 1 year
- Money raised: \$1.25 million from First Round Capital
- Highest valued private startup in the world
- In May 2018, the company was worth \$62 billion

#### Instagram

- Founders: Kevin Systrom and Mike Krieger
- Launched: October 2010
- **Creation Time:** 8 weeks
- Money raised: \$500,000 in seed funding
- Facebook acquires Instagram for \$1 billion in cash and stocks
- Estimated 117.2 million users by 2021



# UBER





# Conclusion

- Keys to Startup Success
  - Innovative idea
  - Utilization of all available resources (money, mentors, industry information, etc.)
  - Positive and aggressive attitude
  - Diverse team
- What differentiates a successful business from a failed business is the business' foundation.



# Strongest Ideologies Behind Startups: The Lean Startup

Jordan Palmer

### The Lean Startup

- Startups fail for a wide variety of reasons but almost all of them share one core issue, they stem from not having a strong foundation that is constantly being re-evaluated and re-shaped.
- Though there are always risks in startups, having a strong foundation and methodology to approach building it will dramatically increase the odds of successfully growing a startup.
- The Lean Startup Methodology was designed to make startups have a more streamlined approach while reframing the foundation of how startups are made.

### Core Problem

- Lacking or wasting of resources
- The Lean Startup focuses on optimizing usage of resources



### Foundational Structure



### Conclusion

- After researching and comparing the Lean Startup the findings showed a positive correlation when companies use the Lean Startup
- The largest benefit is the simplification of the system. Companies can get extremely complicated and begin to get pulled in many directions.
- The Lean Startup is extremely successful in reducing waste and pushing companies into a healthy, focused cycle of re-evaluation.
- These results can be achieved without the Lean Startup but it is extremely effective to keep startups on a steady course.

# What Makes An Unsuccessful Startup?

By: Jorge Peñaloza



### Introduction

#### Motivation

Is your startup company experiencing roadblocks and at risk of becoming unsuccessful? Are you having trouble figuring out where it could have gone wrong? To figure out the issue, we must learn and understand what makes a startup unsuccessful.

#### Basics

Around 90% of startups fail. These failures can be due to the entrepreneur(s) company not having any market need, running out of cash, ignoring customers, etc. Learning to understand how these failures happen will allow us to know where to fix the issue(s) from the source and prevent them from happening once again.

#### Overview

Learning about one's failures is just as crucial as one's success. It is an unsettling fact that many companies fail. If the entrepreneur is willing to become open-minded, accept their failure, and learn from it, then can their company begin to take its first steps towards success. That is why the entrepreneur must learn to embrace their failure and use it to their advantage.

### Main Reasons Startups Fail



### Ways To Improve A Startup



Learning and going through the fundamentals of starting a startup is an effective way of understanding where the company lacked focus in. This will allow the entrepreneur to revise over their mistakes.

Entrepreneurs should learn to keep in mind that failure is the norm when creating a startup company. The means of these failures are just as varied as the means for success. You must be selfmotivated, willing to make many sacrifices, and be able to last for the long term while your business goes from startup to maturity. On top of that, the entrepreneur(s) must accept their failure and learn from their downfall, then can the entrepreneur(s) begin to take their first steps towards success.

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# Fitbit And The Path To Success As The Most Popular Fitness-Focused Startup

Jenny Tran



# Introduction

<u>Motivation</u>: To examine whether Fitbit's path to success followed the 24 Steps to a Successful Startup by Bill Aulet

- This research compares the business outcomes of two rival companies, Fitbit and Jawbone, whose focus is on fitness tracking one has been on the rise to success and one has gone out of business.
- The operations of the two companies in delivering their products to customers will be analyzed based on Bill Aulet's six themes consisted of 24 steps to a successful startup.
- Specifically, fitness tracking wearables (not smartwatches) that track steps, calories burned based on different physical activities and sleep activities made by two companies will be discussed.
- Fitbit started out as a startup company in 2007 that produced small, portable products that could track steps and calories burned based as results of different activities. As of 2020, it is worth 2.1 billions and is rumored to be bought by Google.

Jawbone was known to be an electronic company that sold audio devices, such as speakers and headsets. It started its new product line similar to that of Fitbit in 2011. The company announced its shutdown in late 2017.

# Comparison

#### Who is your customers?

 Both companies aim to distribute their products among ordinary people who are interested in living a health and fit life by keeping track of their activity and diets, not just professional athletes.

#### What can you do for your customers?

- Jawbone focused on developing new hardware to implement in their future products with simple software development.
- Fitbit focused on software development to increase customers' experience interacting with their products such as automatic, wireless data syncing with different digital platforms (computer, phone, etc.) through Bluetooth and different features such as goals, diet tracking, sharing performance with other users.
- Fitbit products are less expensive than Jawbone products. However, Jawbone products take fairly less time to charge and have better battery life.

#### How does your customers acquire your product?

 Both Fitbit and Jawbone sell their products on their websites and retail outlets such as BestBuy, Target, Walmart

# Comparison Cont'd

How do you make money off your product?

- Fitbit and Jawbone attract their customers by advertising their products on the internet and websites.
- Both companies are also on a race to developing new products at a competitive pricing. Jawbone bought 3 food-focused app companies (Massive Health, BodyMedia, Nutrivise).
- Fitbit offers different level of subscriptions to customers to access a variety of features of their software.



How do you design & build your product?

- Jawbone made announcements about their new product-line on social media websites.
- Fitbit brought their initial product to TechCrunch 50 conference.
- Both companies get feedback about their products from their own websites or through other technology-based websites.

How do you scale your business?

- Fitbit raised more money from venture capitalist Brad Feld and partnered with BestBuy to distribute their product
- Jawbone struggles to grow their business and keep the quality of their product up-to-date

### Conclusion

As can be seen from the previous slides, Fitbit, even though being a young company started in 2008, was able to fulfill all 6 categories and met on-going success over the years.

- Jawbone on the other hand, started out as an electronic company in 1999 offering audio products and introduced their fitness-tracking products in 2011, was able to operate up until 2017 before its liquidation.
- In the 6 themes, Jawbone lagged in developing new products to offer to customers at the right time; in turn was not able to figure out ways to attract customers to make money off their products and scale their business.

This indicates that even a well-developed company can fail in a new industry if it does not consider many aspects of doing business in order to take the right path.





# Connecting Disruptive Innovation and Startups

MECE 5397: Engineering Innovation & Entrepreneurship Jerry Tristan PSID: 1147951

### Background

- Disruptive Innovation
  - Business-Model Innovation
    - Redefine existing product or service and how it's provided to customer

Uber

NETFLIX

- Radical Product Innovation
  - Introduce products and value propositions that disturb consumer habits and behaviors
  - Undermine competences and complementary assets on which existing competitors have built success

#### • Startups

 Young company with efforts to develop a unique product or service and bring it to market

### Business-Model Innovation

- Must enlarge existing economic pie either by:
  - Attracting new customers into market
  - Encouraging existing customers to consume more
- Dilemma for established firms:
  - New ways of competing conflict with existing ways
- Example Uber
  - Startup focused on-demand transportation service
  - Increased user experience adding value to existing customer to consume more & attracting new customer into market



### Radical Product Innovation

- Innovations rarely driven by demand
  - Result from supply-push process
    - New markets created with many entrants
    - Dominant design emerges to signal industry growth
    - Early years of new market structure remains fluid
  - End result Early pioneers rarely scale up from small niche to mass market
  - Irony
    - Late entrants can capture market from tunnel-vision early pioneers
- Example Apple
  - iPod vs MP3
    - iPod enters MP3 market three years late
    - Focused on aligning mp3 with broadband technology
    - Followed waves on technology and executed innovation





### Summary

### • Startups

- Successful entrance into mass markets
  - Disruptive innovation increases likelihood

### • Existing competitors

- Must find way to respond
  - Adopt invest in new model or technology to become more competitive
  - Don't adopt invest existing business or counterattack innovators
- Disruptive Innovation
  - Both innovation models follow similar process to invade existing markets
  - Each produce different kinds of markets
  - Differ in managerial implications



# MACHINE LEARNING IN THE HEALTHCARE MARKETPLACE

INNOVATIVE PRODUCTS AND BUSINESS MODELS

JOEL URIBE

FALL 2020

# SOFTWARE AS A MEDICAL DEVICE & BUSINESS MODEL INNOVATIONS

THERE ARE TWO DIFFERENT, BUT EQUALLY IMPORTANT INNOVATIONS RELATED TO MACHINE LEARNING.

SOFTWARE AS A MEDICAL DEVICE INNOVATIONS SUCH AS AN IMAGE SYSTEM THAT CAN DIAGNOSE SKIN CANCER OR AN ELECTROCARDIOGRAPH THAT CAN PREDICT A HEART ATTACK.

BUSINESS MODEL INNOVATIONS SUCH AS PREDICTIVE HEALTHCARE AND MORE EFFICIENT CARE ARE ALSO POSSIBLE THANKS TO MACHINE LEARNING.

### HEIGHTENED EXPECTATIONS: SINGULARITY?

GIVEN THE SPEED OF ADVANCEMENT IN THE PREDICTING A POINT WHEN COMPUTERS COMBINE ALL THE AVAILABLE DATA AND USHER IN A NEW ERA OF THIS MIGHT ALSO SUGGEST A PEAK OF INFLATED EXPECTATIONS.





AT HEALTH[AT]SCALE A STARTUP COMPANY, THEY HOPE TO EMPLOY MACHINE LEARNING TO BE ABLE TO PROVIDE PERSONALIZED PREDICTIVE MEDICINE TO THEIR CUSTOMERS. TO HELP THEM AVOID COSTLY HOSPITAL VISITS BY PROVIDING ACTIONABLE SOLUTIONS BEFORE A EMERGENCY EVENT TAKES PLACE.

PREDICTIVE MEDICINE: A CASE STUDY. HEALTH[AT] SCALE

### MACHINE LEARNING AND THE FUTURE OF HEALTHCARE

THE FUTURE OF MACHINE LEARNING IN HEALTHCARE LOOKS BRIGHT BUT IT STILL FACES THE CHALLENGES OF A YOUNG TECHNOLOGY INCLUDING HEIGHTENED EXPECTATIONS AND REGULATORY ISSUES.

THESE ISSUES ARE SLOWLY BEING OVERCOME BUT IT MAY BE ANOTHER 20 YEARS BEFORE THIS NEW TECHNOLOGY BECOMES THE INNOVATIVE SOLUTION IT PROMISES IT CAN BE.

# The Challenges and Advantages of Entrepreneurship

by Ky Huynh (UHID: 1664239)

### Introduction

- Entrepreneurship is the process of designing a business or businesses bearing all the risks to make a profit.
- Entrepreneurs experience various challenges during the process of undertaking business activities.
- Entrepreneurship is a journey that involves challenges during the onset of the business and even after it becomes established.
- Most entrepreneurs term it a satisfying endeavor, while others have been crushed under the pressure that comes with entrepreneurship's responsibilities



### Challenges of Entrepreneurship

- One of the many challenges that entrepreneurs face is the lack of capital during the initial stages of operating the business.
- Entrepreneurs do not have this guarantee because their income depends on the current economic situation in a country.
- Personal and business money segregation refers to entrepreneurs in new businesses (sole traders) finding it difficult to separate their business and personal finances.
- Most entrepreneurs have brilliant ideas, they lack practical sales abilities to market their products to consumers.







### Advantages of Entrepreneurship

- Being an entrepreneur is rewarding because an individual can become their own boss, responsible for making decisions.
- The greatest businesses in the modern world have been through the efforts of entrepreneurs such as the Apple company or Microsoft.
- The best satisfaction that an entrepreneur can get from their business is the ability to dictate how much they earn.
- Entrepreneurship is a learning experience that offers the entrepreneur an opportunity to learn new things in business every day.
- Entrepreneurs have various ways to give back to their community due to their flexible working schedules.





### Conclusion

- Deciding to be an entrepreneur offers more work independence but comes with higher risks that are worth taking.
- Entrepreneurship presents excellent opportunities for financial growth and personal freedom, but it also presents specific challenges.
- Every entrepreneur's dream is to make profits and having their business succeed.



### Entrepreneurship in the Online Era

Mohammed Ali


The Internet has integrated itself into the lives of billions of people. It has made life significantly easier. Almost all aspects of life have been altered due to the invention of the internet. The internet can aid and improve businesses and also connect people worldwide.

The venture capital business has changed completely due to the addition of aspects that made entrepreneurship easier such as online networking, website marketing, and new online shopping.

20 years ago, it would be extremely difficult and nearly impossible to try and market your business or connect with others outside your area but now, it is easy as a click of a button.

The consumer is now the one who controls the market and how good or bad a business does.

#### Benefits of Online Businesses

When you start an online business, you are reaching a higher audience than ever before. Using the internet also reduces your operational costs and increase profit and productivity. Tracking your business status and all essentials can be done online which leads to maximum efficiency.







#### New opportunities

Connecting remotely and outsourcing is bigger than ever due to the convenience of the internet.





#### Summary

Overall, Entrepreneurship has evolved and changed greatly as society has progressed. One of the bigger aspects that changed entrepreneurship is the the Internet. Gone are the days of door to door salesman. It is much easier now to connect via the internet such as using social media.

The internet has made starting and advancing your business simple. You can create a website and market your business with the click of a button. Keeping track of your business evaluations and efficiency are now the goals of each and every online business.

Using the internet will also lead you to cut operational costs therefore, increase your profit while doing less of the work. Everyday stores and businesses are moving and including online websites after seeing the success of companies such as Amazon and Ebay.



By: Miguel Montemayor

**Engineering Innovation & Entrepreneurship** 



**MARK** 

Millio

PP

**RESOURCE EFFICIENCY** 

DECENTRALIZATION OF MANUFACTURING

SUSTAINABILITY



# **3D PRINTING**

#### MASS CUSTOMIZATION

- On demand production
- Lower cost
- Easier customization for customer use

#### **RESOURCE EFFICIENCY**

- Low-level operator expertise/interaction
- Design focused instead of material focused
- Reduced need of labor





# 3D PRINTING

DECENTRALIZATION OF MANUFACTURING

Impact in the Supply Chain industry

- Production & distribution of material products become de-globalized
- Manufacturing pulled away from "manufacturing platforms"





#### SUSTAINABILITY

- Reduce raw materials used as well as process-related CO<sub>2</sub>
- Driver towards the "Third Industrial Revolution" (TIR) of a more renewable energy-powered economy



### CONCLUSION

- The industry is shifting from traditional manufacturing to 3D printing manufacturing
- The resource efficiency equates to cost saving and faster manufacturing processes
- Long-term sustainability driving to a renewable energy-power economy





### Consumer Opposition and Innovation Diffusion

Michelle Riley



[1]

Whether its passive or active, both functional and psychological barriers prevent consumers from adopting new innovations.

Although these innovations are essential for growth and advancement, 60 – 80% of innovations fail.

What drives this resistance and how do entrepreneurs overcome it?

# Drivers of Resistance

### Consumers may oppose adoption if the innovation:

- Strays from traditions and norms
- Disrupts habitual behavior
- Has a perceived negative image
- Is an overload of new information
- May be considered harmful or unhealthy
- Is an economic risk
- Diminishes the user's social status
- Has uncertainty in performance

# Overcoming Resistance

- Educating consumer on benefits
- Provide information to reduce uncertainty
- Utilize mass media or individual communication strategies
- Adapt marketing (ex. preferred packing and seller)
- Modify the invention



# Conclusion

Studies show that applying methods to overcome resistance barriers is typically unsuccessful. As a result, there is a bell curve adoption rate for most innovation lifecycles.



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### Tesla And The Disruption of Automotive Manufacturers

**Mohammed Saahir Essa** 



#### Introduction

Core technology in "the battery, the computer software and the proprietary motor" – Martin Eberhard (cofounder) Most valuable automotive company in less than **17 years** Worth **\$279 Billion** (more than Ford, GM, Fiat, and Chrysler combined) Did not invent the Electric Vehicle (EV), just adopted the technology for what customers want in a way they want it



#### What Makes Tesla Special

Make EV the sole business of the company



#### 2011 Tesla Roadster







2020 Tesla Model Y 2020 Tesla Model 3



Phase 1 Supercar Price: \$109,000 Low Production Volume Phase 2 Luxury Price: \$74,705\* Medium Production Volume Phase 3 Affordable Price: \$43,990\* High Production Volume

#### Summary

#### **Consistently Innovate EV Technology**

#### **3 Phase Price Modeling**

#### **Customer Centric Design & Business**

#### Lead The Industry & Think Ahead

# The Unset Way to a Successful Start-Up

By: Michael Perez 11/23/2020

#### Introduction

- Motivation
  - Recently started my own personal start-up business
- Basics
  - Several successful startups like Whatsapp, AirBnB, Instagram, etc.
  - Unique paths still lead to profitable futures if done correctly
- Overview
  - Different styles of startups have different motivations and personal success is subjective



#### **Startup Ecosystem**



- Creating a startup requires an extensive thought process
  - Not doing so leads to unexpected failures
- Different startups follow this ecosystem subconsciously to decide their purpose
- The sourcing of resources is the key to make or break a particular startup

#### **Different Stages of Building a Startup**



#### Conclusion

- Any reason is valid when wanting to create a startup as long as there is commitment and discipline
- Although the process of building a startup can be a complicated process, startup successes can piggy back of each other
- No specific path is the correct way towards having a successful business
  - Usually, researching successful startups can give ideas as to what path is "best" for one to take



### Leadership Tactics to Promote Creativity and Innovation within a Team

#### Nick Schmutz MECE 5397





### Introduction

- I chose this topic because I wanted to dive deeper into steps leaders can take the promote creativity and foster innovation within their teams
- Current management styles often place roadblocks on new ideas and do not normally support ideas that stray too far from current business models
- There are various tactics that managers can utilize to promote creativity and make sure their company stands out among the competition



# What can Leaders do to Cultivate Creativity in Individual Team Members?

- Take a moment to think about possible solutions
  - Allows them to take time to think creatively about different avenues to solve the problem at hand
- Goals, objectives, and overall job expectations should be broad
  - Allows individuals to have more freedom with how the approach a problem
- Provide a mix of intrinsic and extrinsic rewards
  - While bonuses, awards, and promotions are nice, they don't always spur additional creative thought. Combine these things with more independence and time to pursue topics of personal professional interest



# What can Leaders do to Cultivate Creativity in an Entire Team?

- Communication and Collaboration with people from different backgrounds
  - Allow your team to work with people that don't share the same background on projects



- $\circ$  This allows for individuals to think more creatively and can birth innovation
- Create an environment that is safe for new ideas
  - Making an environment where people will not be humiliated or punished can allow for people to voice their ideas and questions
- Remove barriers
  - Barriers make it difficult or near impossible for creative ideas to be pursued
  - Allows your team to think of approaches to problems that don't follow the current norm

#### Conclusion

- Leadership tactics can take place both at a team and individual level
- The are many different steps that can be taken to allow and promote your team to be more creative in their position
- Allowing for more creativity can improve moral in the workplace
- Removing organizational barriers can allow teams to be more innovative on their projects





### Disruptive Innovation & Digital Twinning's Effects

Nate Jordan MECE 5397 – Engineering Innovation & Entrepreneurship

#### **Introduction and Overview**

#### • What is a Digital Twin?

A digital twin is "a virtual replica of an object, being, or system that can be continuously updated with data from its physical counterpart."

#### • Motivation

Digital Twinning is a modern form of disruptive innovation due to the live action data it provides and its ability to create new markets

#### • Overview

This presentation will show how Digital Twins are used in modern systems, and then show what digital twins will do for companies in the future.





#### How Digital Twinning Works and Modern Applications



Modern Applications:

- Energy Production: Preventative maintenance on Gas, Steam, and Wind Turbines
- Automobiles: Provides data that can prevent breakdowns and make road vehicles safer.



#### *How Digital Twinning Pushes Modern Companies into the Future*

U.S. digital twin market size, by end use, 2014 - 2025 (USD Million) 599.4 624.4 2023 2024 2025 2014 2015 2016 2017 2018 2019 2020 2021 2022 Manufacturing Agriculture Automotive & Transport Energy & Utilities Healthcare & Life Sciences Residential & Commercial Retail & Consumer Goods Others

#### **Company Benefits**

- Preventative Maintenance
- Advanced Inventory
- Design Optimization
- Lower System Downtime/Increased Productivity



Source: www.grandviewresearch.com

#### **Summary and Conclusion**

- A digital twin is "a virtual replica of an object, being, or system that can be continuously updated with data from its physical counterpart."
- It works by sensors and actuators of a physical body pushing data to a digital counterpart, and the digital twin runs advanced data analytics to give present and future conditions.
- Digital twin improves quality control of any industry it is applied in. Rather than focusing on repairs, companies can implement preventative maintenance which will improve system productivity.



### CHALLENGES AND FUTURE OF THE KONDRATIEFF WAVES

Phillip Fortune

#### K-WAVES AND THEIR EFFECT

- Kondratieff Waves(K-Waves) are long cycles that describe an old economy that is indicated by technological evolutions in innovations that create a prospering economy, these waves last between 40 to 60 years
- Debates over the validity of the method of measure and predicting the future, the "6<sup>th</sup> wave"



#### COMPLEXITY OF HUMAN NATURE

- Major events like war or a critical conditions leads to economic and human resources being committed to path breaking technologies
- Contributions of geopolitics and natural resources to the growth of the world's socio-economic waves
- Improvements on business frameworks and ethics
- Uncertain future



#### ALTERNATIVE METHODS AND THEORIES

- Global Leadership driven innovations
  - Great power or organization having a purposeful influence on economy or innovations
- Cybernetic Revolution
  - Trend towards autonomation and automation of control
- Sharing Movement
  - Peer to peer operations based on people helping each other



#### CONCLUSION

- Groundbreaking technologies are the driving force for the next wave and economic improvements
- Trends in global events support the need for new technology and innovation to overcome the depression in global economy
- Alternative theories and events supporting the sixth K-wave

