



Drones Business Case

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According to the web-site 'How Stuff Works'



THE EVOLUTION OF DRONES

Drones can be as large as a full-sized plane or small enough to fit in the palm of your hand. By one estimate, more than 1,500 different types of drones are manufactured today for the military, commercial and civilian markets.

[Click to see 200 years of drone tech](#)

Not all innovations are disruptive



- Sustaining
 - An innovation that does not affect existing markets.
- Evolutionary
 - An innovation that improves a product in an existing market in ways that customers are expecting. E.g., fuel injection
- Revolutionary (discontinuous, radical)
 - An innovation that is unexpected, but nevertheless does not affect existing markets. E.g., the automobile
- Disruptive
 - An innovation that creates a new market by applying a different set of values, which ultimately (and unexpectedly) overtakes an existing market. E.g., the lower priced Ford Model T

Clayton Christenson, Disruptive Innovation 1995

So is UAV technology disruptive?



- Disruptive = lower cost and better outcomes than existing offers
- Typical roof inspection using scaffolding = £2000
- Same inspection using a drone = £200
- Huge time savings
- Much safer
 - Falls from height leading cause of injury on construction sites
- Fraction of the carbon footprint
 - Reduced need for steel scaffolding
 - Reduced transportation requirement



Internal applications

- Visual inspection of tall structures, including residential and commercial buildings
- Construction mapping and 3D modelling
- Inspection of wind turbines
- Inspection of highways and highway structures
- Traffic monitoring
- Land surveying
- Event surveillance
- Search and rescue operations
- Agricultural land inspection.....

Business case methodology



- Strategic case
 - Why it is something we should do
- Legal case
 - Whether it is lawful
- Commercial case
 - Market analysis
- Financial case
 - Will it pay? Can we afford it?
- Operational case
 - Staff and other resources

Commercial opportunities

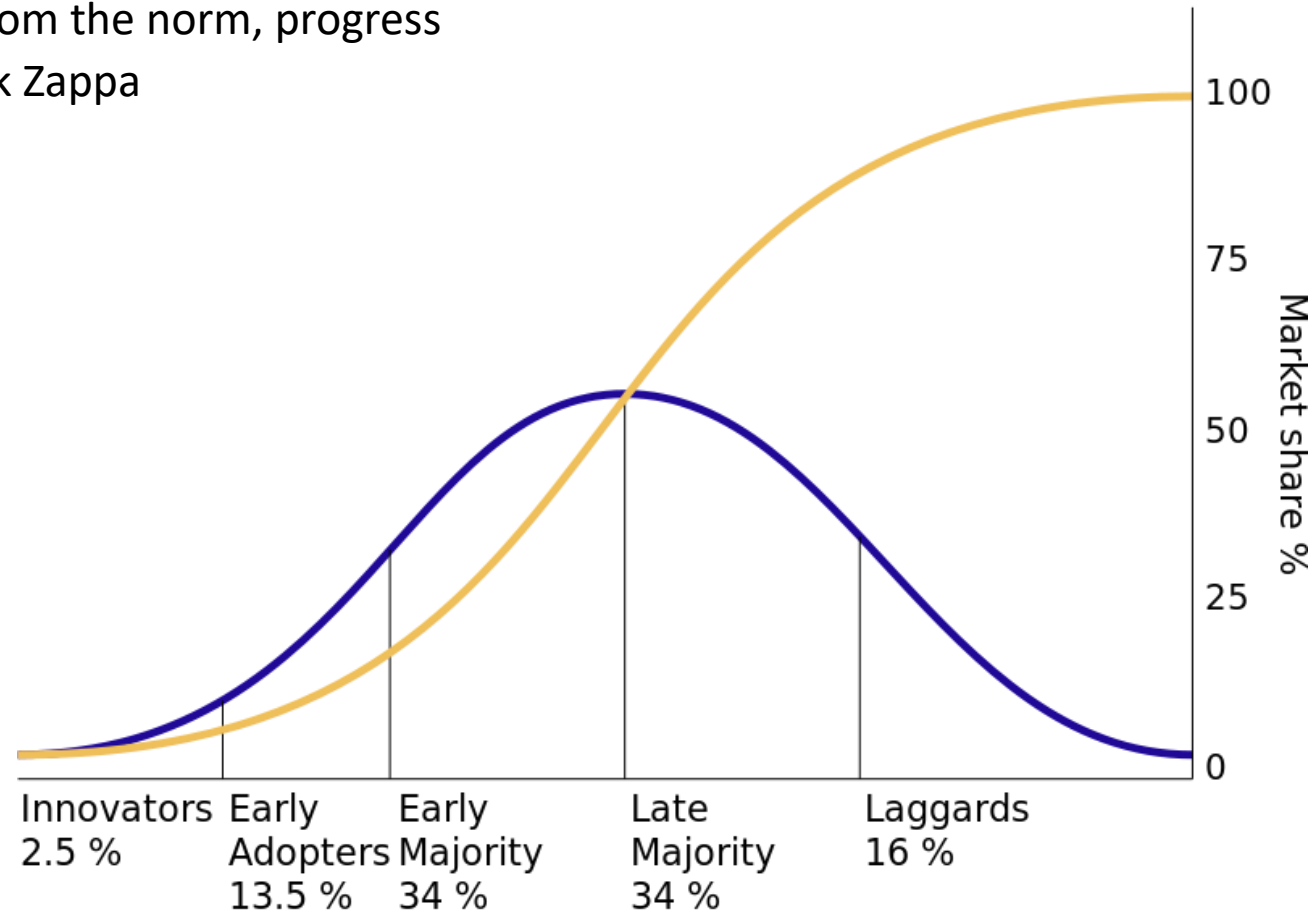


- Hire of drone and pilot with or without analysis of footage
 - Multiple sectors
 - Combine with other innovations - Cloud Computing, Internet of Things (IoT), Artificial Intelligence (AI), Blockchain, Deep Learning
 - Search and rescue
- Drone enhanced inspection services
 - Buildings
 - Land
 - Hazardous areas
- Training and accreditation of other drone users

The Diffusion of Innovations: Everett Rogers 1962



‘Without deviations from the norm, progress is not possible’ – Frank Zappa





Commercial Financial case

- Very low set up costs
 - Professional UAV less than 2K
 - HD camera around the same
 - Training £500
- Low fixed costs
 - Operator
 - Office costs
 - Transport
 - Marketing, if seeking commercial income

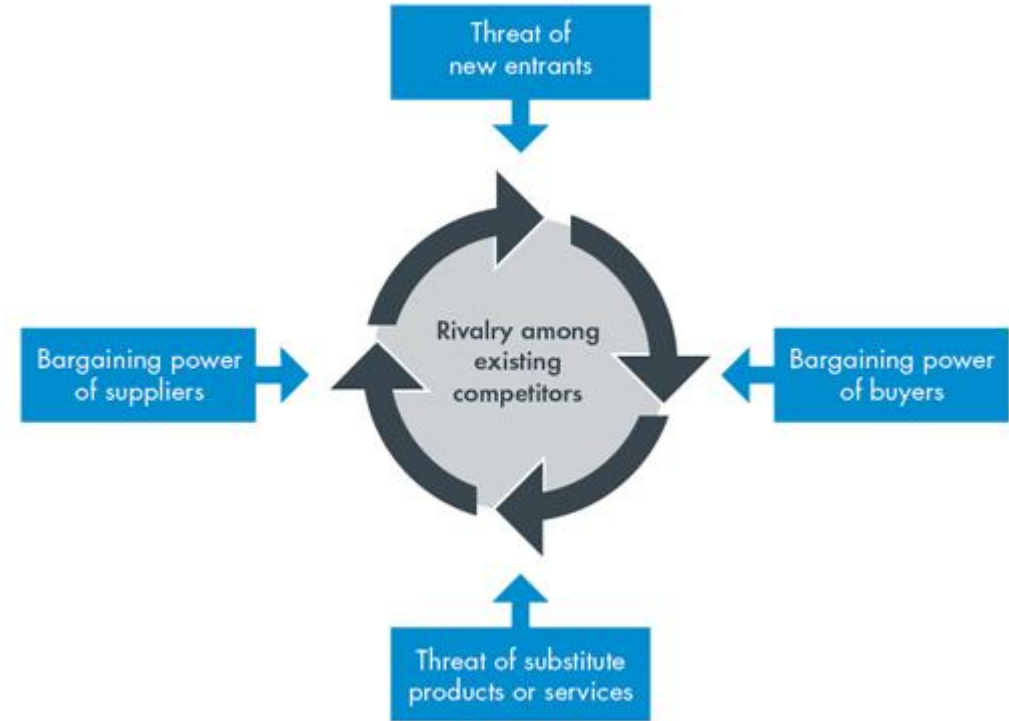


Example of financial case

- Fixed cost = £46,600 pa
- Variable cost = £15 per job
- Break even = 260 jobs pa
- Profit at 500 jobs pa = £45,900
- Profit at 1000 jobs pa = £138,400

Porters five forces

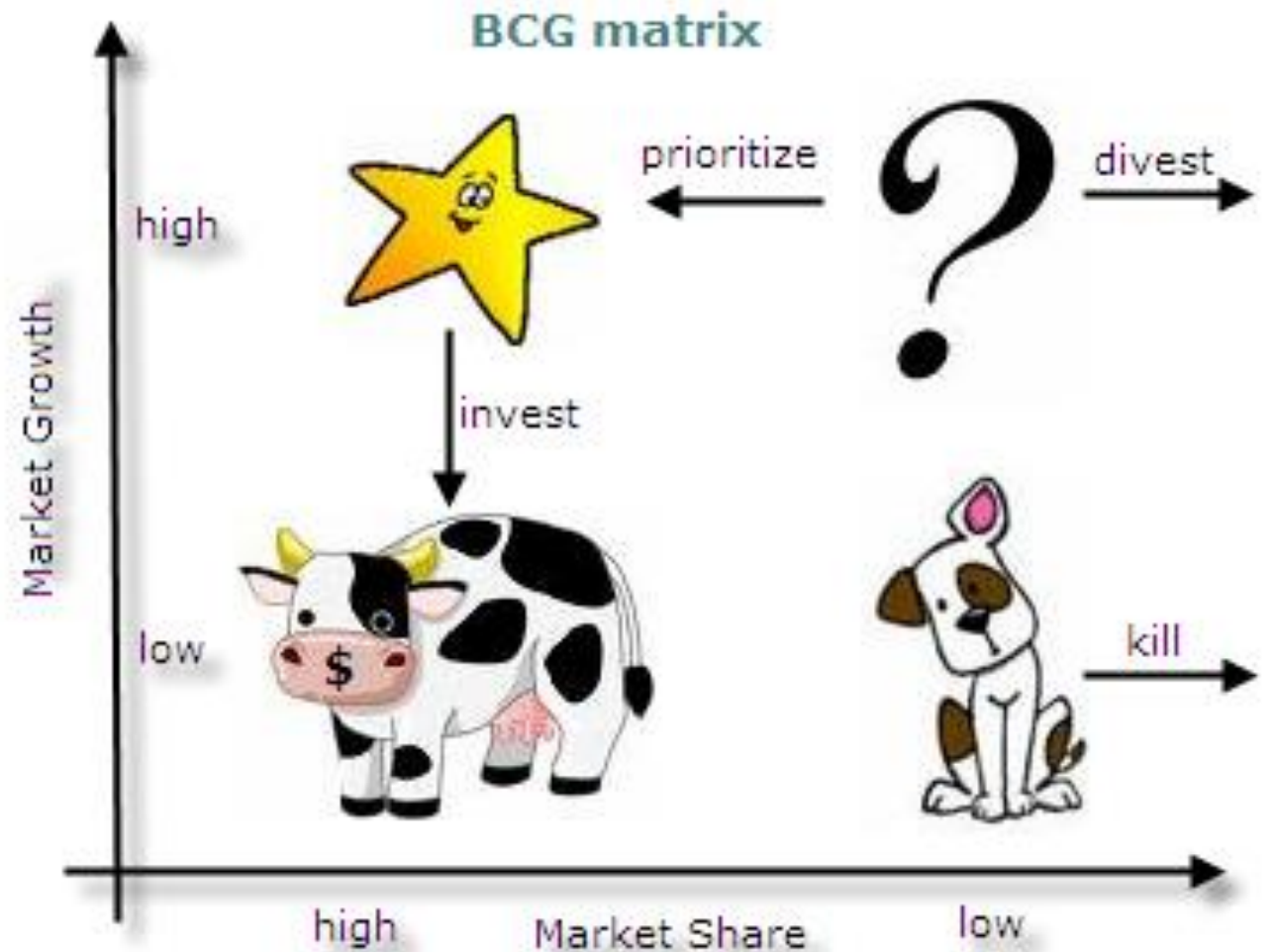
- Currently low level of competition as new market
- Might be expected to increase
- DIY also likely to grow
- But potential for emerging offers



Commercial analysis: drone hire business



- Short run star
 - New market with loads of uncontested demand
- Medium run cash cow
 - Low barriers to entry so growing competition
- Long run dog
 - Decline as DIY takes over
 - Transition to training and regulation - new star





Trading Legal Case

- Vires?
 - Power to do
 - Power to charge for what you're doing
 - Power to make a profit
 - Power to use the profit
- Commercial purpose?
 - Objectives
 - Outcomes

Legal case, regulatory



- International obligations – Chicago Convention 1944
- European regulatory framework
- Civil Aviation Authority
 - Dronesafe.uk web-site
 - Licencing
 - Insurance
- Air Navigation Order 2016.
 - Company with permission for commercial operation or PfCo
 - Restrictions on range
 - Restrictions on location



Legal case: other issues

- Data protection
 - Data Protection Act
 - GDPR
- Privacy
 - Human Rights Act



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