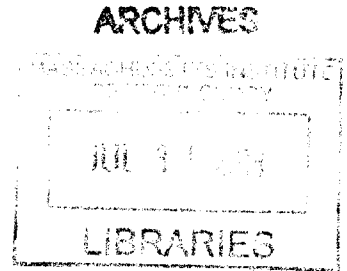


**Analysis of Crowdfunding Descriptions
for Technology Projects**

by

Rachel Fernandes

BSc. Mechanical Engineering
Massachusetts Institute of Technology, 2013



SUBMITTED TO THE DEPARTMENT OF MECHANICAL ENGINEERING
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by
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a Bachelors of Science degree in
Mechanical Engineering

ABSTRACT

There are many factors that contribute to the success of a project on crowdfunding sites, such as Kickstarter. These include, but are not limited to, the specified project goal of funding, the success of similar projects, the funder incentives, the amount and type of information given on project webpage, the credentials and trustworthiness of project creators. Every successful project on Kickstarter has a project video, which introduces the product.

This thesis analyzed four attributes of the project video to determine the success of the project, i.e. whether or not the project received the requested funding. These attributes included the trustworthiness of creators, level of demo of product, finish of product and amount of excitement engendered by video. A survey of undergraduate students was conducted, in which participants were asked to rank each of these attributes for videos of both successful and unsuccessful projects. The results are discussed.

Thesis Supervisor: Maria Yang

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1 INTRODUCTION

Crowdfunding has evolved with the Internet era to afford aspiring entrepreneurs the opportunity to see their visions through. Anyone has the ability to post on sites, such as Kickstarter, and ask for a respectable sum of money to fund his project. His success in achieving his goal, however, depends, in part, on how well he pitches his idea and the strength of the idea itself.

This study aims to understand crowdfunding and the variables that lead to successful project funding through extensive review of the existing literature. It also aims to add to this research area by analyzing how the project videos, the first features seen on the projects' webpages, affect the outcome of the funding period, and thus how successful the project is. Kickstarter suggests that each project produce a video five to six minutes in length to present their idea/product. What is said, or how the product/idea is presented, must have a strong impact on how the viewers/potential funders esteem the product and the creator's potential to produce as promised.

The limitations of Venture Capitals and Angel Investors are discussed in the Literature Review, as well as the natural evolution of crowdfunding. Since crowdfunding is a somewhat recent development, it is expected that a limited amount of in-depth analysis exists. But the studies found and described in the Literature Review suggest that this area of research is now taking off as more and more people understand and participate in crowdfunding.

Kickstarter is chosen as the subject of analysis. The site offers general statistics on their successful and unsuccessful projects but most information is gathered from the few studies that have been done that are Kickstarter-specific. A research gap is identified from the sum of the literature that is reviewed, and this area is pursued in this study.

Only projects under the Technology category on Kickstarter are analyzed. Eight projects are chosen, both successful and unsuccessful, and their videos are viewed by survey participants, who rank specified qualities of the videos. Because of the technological nature of the products being analyzed, some of the video qualities suggested were also technical in nature. These qualities are then analyzed to see what correlation, if any, exists between them and the success of the project, i.e. whether the project receives its requested funding. If a correlation is identified, then this thesis simply acts an indication of a trend that should be further studied to understand it in depth.

Therefore, this thesis simply unlocks an area of research to be pursued to better understand the dynamics of crowdfunding, and what fuels people to give money to strangers.

2 LITERATURE REVIEW

2.1 Understanding Crowdfunding From An Evolutionary Standpoint

Crowdfunding is the financing of a project or a venture by a group of individuals instead of professional associations, such as banks, venture capitalists or angel investors. In contrast, crowdfunding occurs without an intermediary, such as a bank: entrepreneurs

“tap the crowd” by raising the money directly from individuals. The typical mode of communication is through the Internet [1].

Crowdfunding is a subset of crowdsourcing. Kleemann et al. (2008) defined crowdsourcing as follows: “Crowdsourcing takes place when a profit oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the Internet, with the intention of animating individuals to make a [voluntary] contribution to the firm's production process for free or for significantly less than that contribution is worth to the firm” [2].

Lambert and Schwienbacher (2010) defined crowdfunding by extending this definition of crowdsourcing to include particulars specific to crowdfunding: “an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes”[3].

The article “New Solutions to the funding Dilemma of Technology Startups” discussed the evolution of how startups get funded from Venture Capital (VC) to Angel funding to crowdfunding. It attempted to understand the shortcomings of each and develop and improve on current crowdfunding practices to develop a new model that addresses these issues. The study informs a large portion of the next five subsections [4].

It should be noted beforehand, that these shortcomings were used to inform the methodology of this thesis by asking the question, does the move to crowdfunding via websites such as Kickstarter actually eliminate the issues found with early methods of startup investment? These shortcomings should be kept in mind when analyzing the success of Kickstarter projects.

2.1.1 Shortcomings of Venture Capitalists

The study first discussed the issues with investing via venture capitalists. In this climate, it has become difficult for venture capitalists to find companies to invest in. In 2010, the number of deals reached its lowest point since its steady decrease from 1997 [4]. Venture capitalist companies have been unsuccessful in adapting their business accordingly and thus their value proposition to investors and entrepreneurs is being markedly reduced.

Investors backing these companies have high expectations, but unfortunately the firms cannot produce the expected return due to fewer and fewer promising startups. This increased risk of illiquidity causes a shift in investor preference to other types of alternative investment practices that provide a better risk/reward ratio. The case of a weak venture capitalist proposition is similar for entrepreneurs as well. In the end startup technologies need guidance and mentorship rather than large investments to get their businesses going. Thus, venture capitalists will miss the mark, if they are only offering improved financial offers [5].

2.1.2 VC to Angel Investors

These challenges with VC funding lead many entrepreneurs to turn to angel investors, who, not only offer investment, but also offer greater attention and guidance to the business [6]. Working with angel investors means acquiring venture capital from

individual investors. These individuals look for companies that exhibit high-growth prospects, have a synergy with their own business or compete in an industry in which they have succeeded. These potential companies, however, must be willing to share some ownership and relinquish total control [7] .

Angel investors typically fill the gap between the original funding provided by the founders, relatives, or small investors and later VC investment. In other words, they usually finance startups up to \$1 million [6]. Angel investors provide a more flexible alternative to venture capitalists. They tend to require less information about the company and it takes them less time to make an investment decision and they usually close a deal within six weeks. As for the investment expectations, they usually require a 30-40% return on investment, which is much less than what a VC firm expects.

Although angel investment looks attractive and more flexible, some due diligence is necessary to make sure that they have the shoulders to support a startup during its journey. The most common problems arises with abusive term sheets and agreements signed between the entrepreneurs and the angel, cash shortage when the startup needs it the most, and angels who have no prior experience of investing in startups [8].

2.1.3 Considerations for Technology startups

When it comes to technology entrepreneurs, it is important to nurture ideas that could turn into successful ventures while keeping a strong customer focus. In order to secure funding, entrepreneurs must understand the market in which they are competing and be able to overcome the problems that may present themselves when creating a successful venture. It is essential that they be able to create compelling business plans with a strong focus on cash flow management and time to revenue, if they are to impress investors assessing an investment opportunity [9]. According to the OED survey conducted in 1998, over 70% of business plans are rejected because of a poor initial impression of their financial merits and the abilities of the entrepreneurs to succeed [6]. It is thus clear that many entrepreneurs would benefit from greater preparation when looking for investment.

As such, further innovative solutions are required to help technology startups overcome the funding challenges they encounter. Crowdfunding may be one such solution. Crowdfunding calls the public to invest in ideas in the form of intellectual or monetary support.

2.1.4 A move towards crowdfunding

Kickstarter is one such initiative and provides funding to projects that are related to music, art, technology, film, food and other fields. The model it is based on is all-or-nothing, that is, the invested funds are only released to the project's founders once a critical threshold has been met. Otherwise, the funds are returned to investors.

2.1.5 What a better model might look like

The article "New Solutions to the funding Dilemma of Technology Startups" discussed the basis of a new approach to startup funding, which used "the force of the

community (the crowd) to raise investments for startups and use an ecosystem (the collective) to provide a robust startup selection, mentoring, and investment process”. The takeaways from the conclusions of the study, inasmuch as they inform the purposes of this thesis, are summarized as follows:

- Creators of technology projects in particular need to be aware that, compared to other types of investment, the crowd's decision-making is hampered by the relative lack of information because startups need to keep strategic information private at an early stage. Founders should note that if an investor does not have this information at hand, he is more likely to make a poor investment decisions. This affects how founders present themselves from the get-go. i.e. what is conveyed up front.
- Investors should have some capacity to be active in the venture and provide knowledge to build the business, but that their comments and ideas are constructive are accepted only by the governance in place and community.

2.2 Funder Incentives And Trust-building In Crowdfunding

The study conducted by Belleflamme, Lambert and Schwienbacher (2011) provides features of crowdfunding from an Industrial Organizational point of view based on the results of a survey they conducted in 2010. For the purposes of this thesis, it provided insight into funder incentives, and essentials of success, such as trust-building.

Crowdfunding can be viewed as a broader concept than purely fund-raising: it provides insight into market potential by validating ideas in a specifically targeted audience. One can get feedback on the product/service offered [10].

The investing crowd may be consumers and thus crowdfunders have an interest in having the project realized not just for purely financial reasons. When investing crowd is also acting as a consumer, “their pre-ordering enables price discrimination. The drawback is that the extent to which the price-setting for both groups is optimal depends on the financing needs for setting up production.” If financing needs for setting up production is large, the entrepreneur must encourage more consumers to pre-order which thus constrains his ability to set different prices for contributing and non-contributing consumers. Therefore, the right community needs to be identified such that the investing crowd can enjoy “additional private benefit” [10].

Oestreicher-Singer and Sundararajan (2010) found that crowdfunders are influenced by the success or failure of related projects and use the actions of other crowdfunders as a source of information in their funding decisions [11].

Belleflamme et al conducted a survey and found that consumers who pre-order are those with a high willingness to pay for the product. However these customers are generally unidentifiable. Therefore community experience is important: project creators should enhance the perceived quality of the product for the consumers who agree to pre-order.

There is however a trade-off in crowdfunding. As crowdfunding offers an enhanced experience to some consumers, it allows the firm to practice second-degree price discrimination and obtain a larger share of the consumer surplus. However the firm

is constrained by the amount of capital that it needs to raise and thus larger amounts require more consumers which in turn affects how profitable the menu pricing scheme is [10].

The survey conducted by Belleflamme et al showed that trust-building is essential. Crowdfunders are offered very little investor protection as most individuals only invest tiny amounts leading to “corporate governance issues” [10]. In such cases, crowdfunders have little right to protect their interests as stakeholders and are less likely to intervene considering how small their contributions are anyway. It is thus paramount that project creators build up their trustworthiness in whatever means possible.

In terms of further funding incentives, financial return seems to be of secondary concern, suggesting that crowdfunders care about social reputation or enjoy private benefits from participating in the success of the initiative. This was also shown to be the case by Ghatak and Mueller, 2009 [12].

Belleflamme et al stressed, however, that since the relationship between funders and founders varies by context and the nature of the funding effort, it is difficult to come up with an overall formula for success.

2.3 Further Determinants Of Success And Failure Of Crowdfunding Projects

The study by Mollick (2012) drew on a dataset of nearly 47,000 projects with combined funding of over \$198M. It offered an initial description of the underlying dynamics of success and failure among crowdfunded ventures [13]. Some of these attributes include personal networks, underlying project quality and geography.

The aim of this study was to gain an analytical understanding of crowdfunding, by using the extent of US-based projects on Kickstarter. They attempted to first understand whether crowdfunding successes and failures are explainable, at least in part, by existing theories on new venture performance; that is, does crowdfunding fit within the existing literature on entrepreneurialism. “We do not know whether crowdfunding efforts reinforce or contradict existing theories about how ventures raise capital and achieve success” [13].

Therefore an in-depth analysis of when crowdfunding resulted in successful product development was conducted, and the variables linked to success in crowdfunding ventures were determined. Secondly they tried to understand what role, if any, geography continues to play in new ventures in a crowdfunding regime, as crowdfunding websites like Kickstarter essentially eliminate geographical constraints. They also try to understand if crowdfunding “works:” that is whether or not crowdfunded projects actually deliver results [13].

2.3.1 An educated guess at variables of success

They identified attributes of a project that could be predictors of success. They measured project quality by the level of preparedness, which they considered implied quality; this was determined by time and effort to ensure pitches were complete and polished. It should be noted, that, to this end, Kickstarter usually suggests that

founders produce a video to demonstrate their level of preparedness: “projects with videos succeed at a much higher rate than those without” [4].

Mollick (2012) identified the following variables to determine their contributions to project success:

- *Project goal*: The amount founders seek to raise using crowdfunding. While many factors may influence project goal, there is a strong incentive for individuals to select realistic project goals, since raising too little capital may result in project non-delivery, and high project goals likely make projects less likely to succeed.

- *Funding level*: The percentage of a project’s goal actually raised by founders. Projects that raise at least their goal are considered successful or funded projects.

- *Backers*: The number of funders supporting the project.

- *Pledge*: The amount of money raised divided by the number of backers, or the mean pledge per backers.

- *Facebook friends of founders*: The role of social networks in funding new ventures. Kickstarter is linked to Facebook; it was possible to determine how many Facebook connections each founder has.

- *Category*: Kickstarter categories include Film, Dance, Art, Design and Technology. This study acknowledged that Design and Technology projects were treated somewhat differently by Kickstarter, since they usually delivered concrete products as rewards. These projects needed to produce a manufacturing plan and a clear delivery date for rewards.

- *Updates*: Founders on Kickstarter are encouraged to post updates about their projects during and after the fundraising period. Updates represent efforts by founders to reach out to current and potential funders, and to inform interested backers about developments in a project. The data allowed them to track the content and timing of these updates.

- *Comments*: Funders and potential funders can post comments about projects. The data collected by this study on comments included details on the quantity and timing of these postings.

- *Duration*: The number of days allotted to accept funding. Although Kickstarter initially allowed projects to raise funds for as many as 90 days, it now limits this time to 60 days, but encourages 30 day funding windows.

2.3.2 Findings of Mollick (2012)

Mollick (2012) found that crowdfunding projects mostly succeeded by narrow margins, or else failed by large amounts. It also seemed to be the case that projects that signal a higher quality level are more likely to be funded, and large numbers of friends on online social networks are similarly associated with success. According to their analyses, there was a strong geographic component to the nature of projects, with founders proposing projects that reflect the underlying cultural products of their geographic area (such as country music in Nashville, Tennessee).

The data also suggested that “the nature of the population in which founders operate is related to project success” [13]. Finally, the data showed that founders of projects seemed to make efforts to fulfill their obligations to funders, though many projects are delayed. They found that the size of the project predicted delays, with

overfunded projects being particularly vulnerable to delay, likely due to the increased complexity and expectations associated with large projects.

Altogether, this study suggested that there is substantial value in further studying the “dynamics of crowdfunding, since it sheds light on a variety of subjects of interest to academics and policymakers, including the nature of funding for new ventures, the role of individual quality and networks in venture success, and the importance of geography in new ventures” [13].

2.4 Important Considerations For Crowdfunding Analyses

In crowdfunding, quality signals are further magnified through a Matthew Effect which multiplies the impact of project quality [14]. This means that projects of esteemed high quality attract backers who, in turn, promote them to potential backers, thus increasing publicity and funding potential. Identifiable signals of project quality should predict project success. Project quality may not be as clear or as influential to funders in crowdfunding settings, compared with more traditional investments.

Mollick (2012) noted that it was important to consider that Kickstarter projects cover a wide range of funding levels, so \$100 projects may have to be modeled differently from \$100,000 projects.

2.5 Kickstarter-specific Information

Since Kickstarter was launched on April 28, 2009, over \$600 million has been pledged by more than 2.5 million people, funding more than 40,000 creative projects [15]. In Kickstarter, an entrepreneur (called “creator” in Kickstarter) can create a webpage for the project on the platform where they explain its purpose and what they expect to deliver with the contributed funds. The creator indicates the funding goal of the project (the amount of money they require to execute the project as specified), along with an end date for the project funding cycle [14]. Table 1 shows a summary of Kickstarter statistics for 2010-2011. Figure 1 shows a list of Categories available on Kickstarter as well as the number of successful and unsuccessful projects as of May 2013.

Table 1: Summary of Kickstarter Statistics for 2010-2011 [16]

Variable	Mean	Std. Dev.	Min	Max
Funded (1=yes)	0.63	0.48	0	1
Goal (\$)	8509.83	139093.10	1	21474836
Total Amount Pledged (\$)	4633.17	13759.15	1	942578
Percent of Goal Funded	93.22	179.94	0	15454.20
Duration (days)	41.37	18.52	1	93
Total Number of Backers	62.59	189.54	1	13364
Total Number of Backers in First Week	19.31	69.73	1	4683
Total Number of Backers in Last Week	15.93	58.68	1	3535
Number of Backers Added per Day	1.51	8.52	0	2212
Average Contribution per Backer (\$)	73.64	70.08	1	1679.67
Number of Reward Categories	7.89	3.50	1	31
Maximum Reward Claimed (\$)	504.37	964.50	1	10000
Has Video (1=yes)	0.81	0.39	0	1
Number of Words in Title	6.37	2.87	1	19
Title has Colon (1=yes)	0.21	0.40	0	1
Number of Blog Posts by <i>Kickstarter</i>	0.02	0.15	0	4
Number of Days on Top 50 Most Popular List	1.41	4.96	0	75
Total Number of Public Updates	2.65	4.09	0	83
Total Number of Private Updates Only to Backers	0.44	1.28	0	49
Proposed by a Serial Creator (1=yes)	0.08	0.26	0	1

Creators can communicate with their supporters and/or potential contributors by posting private or public updates. When a potential donor (called “backer” in Kickstarter) visits an active project’s webpage, they are presented with all the project information initially posted by the creator. Moreover, potential backers are shown the current funding status of the project (i.e., the funds raised thus far), the ultimate funding goal, and the number of days remaining until the project funding cycle expires directly adjacent to the project video.

A visitor can also see a listing of the other backers that have contributed to the project, as well as the timing of these contributions. Individual donations are not publicly shown. Kickstarter has a number of search options to help potential backers discover projects they want to support. In particular, projects can be sorted based on the first week after their initial launch (Recently Launched), last week before the project funding closes (Ending Soon), or popularity (based on the number of backers recently added to a project) [16].

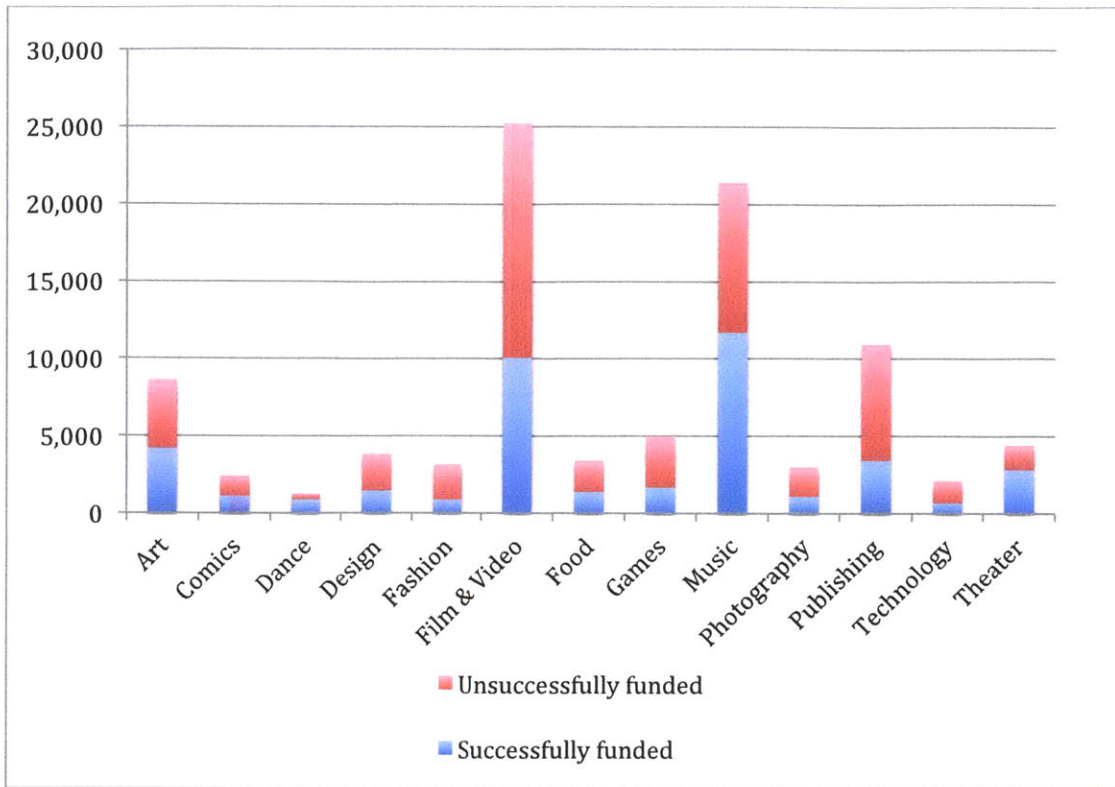


Figure 1: Successful and Unsuccessful Projects by Category [15]

3 RESEARCH GAP

Recent research, such as the studies described in the above Literature Review, take promising strides in better understanding the value of crowdfunding through sites such as Kickstarter, as well as the variables that could possibly affect whether or not these projects get the funding they ask for.

These variables include funder incentives, the level of trust developed between funder and founder, geography, project category (like Music, Technology, Film etc.) and underlying project quality. The work presented in this paper seeks to further add to this area of research by considering how project videos affect the success of the projects, in terms of funding achieved. The extent to which the videos impact success of the project has been minimally studied, such that only the existence of the video vs. the success of the project was documented. This thesis aims to analyze aspects of the video and determine for each whether there could be a possible correlation with project success.

4 METHODS

4.1 Determination Of Success Variable From Literature Review

The literature review discussed the shortcomings, model analysis and success and failure analysis of crowdfunding. This extensive literature review directly informed the focus of this thesis, through what was suggested would contribute to the success of a crowdfunding project. The following potential variables of success summarize and build on the takeaways of the existing work:

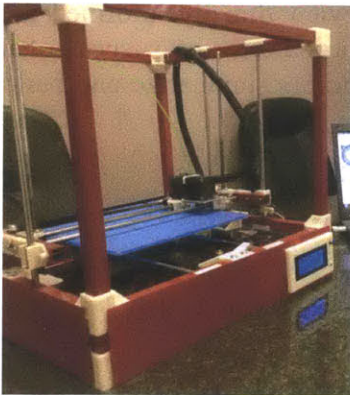
- Amount and type of Information of Invention
- Kickstarter category (i.e. Film, Technology, etc.)
- Rewards (Funder Incentives)
 - Type of reward
 - If pre-ordering is available, the percentage of funders who pre-order.
This won't hold if pre-ordering is the only option.
- Trustworthiness of creators
 - Credentials
 - Tone of video
 - Quality of updates
 - Frequency of updates
 - Do they give a progress-report?
- Duration of project funding
- Video
 - Do they have one?
 - To what extent do they demonstrate the product?
 - What is the level of finish of the product?
 - How engaging is the video?
- Success or failure of related projects
- Quality of manufacturing plan

Project videos were selected as the success variable to be analyzed. Each project video was broken up into its relevant attributes/characteristics, later referred to as X_i . Four attributes were chosen based on what was assumed could be reasonably determined and judged upon a viewing of the video of a project, without consideration of the information available elsewhere on the project webpage, such as Manufacturing Plan, creator credentials and so on.

4.2 Chosen Kickstarter Projects

The projects were constrained to the Technology domain, to enable specific questions to be addressed. They were also chosen to be within a project goal range, i.e. \$30,000 to \$500,000. The videos of eight projects, were chosen to be analyzed: four successfully funded projects, and four unsuccessful projects. It should be noted that

success was defined by whether or not the project reached its project goal in the allotted funding time, and represented by a 'success coefficient' defined later. The successful projects are shown in Figures 2a-d and the unsuccessful are shown in Figures 3a-d.



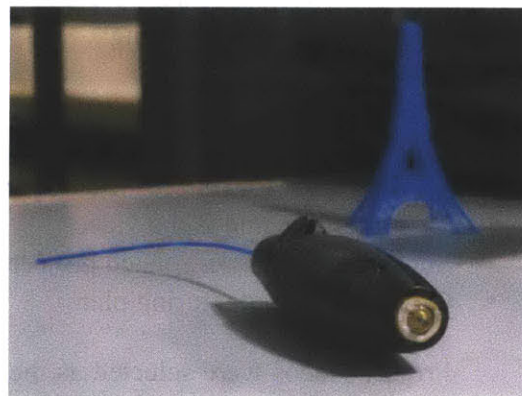
(a) RigidBot 3D Printer



(b) Pebble e-Paper Watch for iPhone and Android



(c) Smart Herb Garden



(d) 3Doodler

Figures 2(a-d): Successfully funded projects

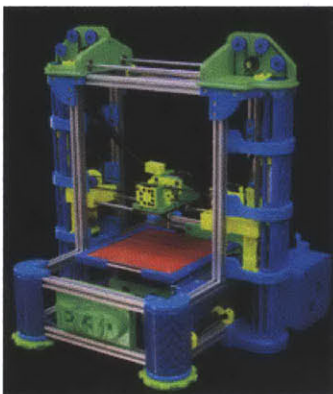
- (a) [source: <http://www.kickstarter.com/projects/1650950769/rigidbot-3d-printer?ref=live>]
- (b) [source: <http://www.kickstarter.com/projects/597507018/pebble-e-paper-watch>]
- (c) [source: <http://www.kickstarter.com/projects/mattiaslepp/smart-herb-garden>]
- (d) [source: <http://www.kickstarter.com/projects/1351910088/3doodler>]



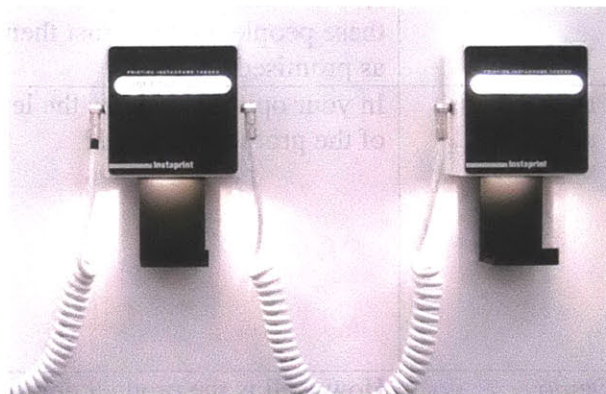
(a) HubDock Bicycle Wheel Quick Release



(b) Suntrunks- Solar Power to go



(c) EZ3D Desktop Printer



(d) Instaprint

Figures 3(a-d): Unsuccessfully funded projects

- (a) [source: <http://www.kickstarter.com/projects/486778887/hubdock>]
- (b) [source: <http://www.kickstarter.com/projects/670631330/suntrunks>]
- (c) [source: <http://www.kickstarter.com/projects/jakewood/the-ez3d-desktop-printer>]
- (d) [source: <http://www.kickstarter.com/projects/breakfastny/instaprint>]

4.3 Survey to Analyze Project Videos

A survey of twelve undergraduate students was conducted to determine how video viewers would rate each of the eight videos with respect to the attributes specified. Table 2 identifies this list of video attributes and quantifies the ranking used in the survey. A Comments section was also added for each video that encouraged participants to list their reasons for their rankings or suggest other features that could contribute to the success of the videos.

The survey participants covered a range of technological and non-technological majors, including Bio-Engineering, Political Science, Literature and Mechanical Engineering. Although Mechanical Engineers, for example, may be more qualified to

answer technical questions, such as “How far along a product is in its prototyping stage?”, the range of majors was chosen to more accurately represent the range of backers who would view Technology projects on Kickstarter [15].

Each participant was surveyed individually so as to avoid group persuasion. The videos were set up by the surveyor on full screen, such that the rest of the project webpage was non-viewable. This ensured that the participants were unaware of which project was successfully funded or not. At the top of each survey sheet, participants were asked to note that their opinions of the product itself should not have biased their judgment of the videos, and thus should not have affected the way in which they answered the questions.

Table 2: Survey questions that asked to rank various video attributes

Video Attribute	Survey Question	Ranking (1--->5)
Trustworthiness	How would you rank the trustworthiness of the creators in the video? ie. How much would you want to invest in these people; do you trust them to produce as promised?	1. Seem unreliable ↓ 5. Seem very trustworthy
Product Finish	In your opinion, what is the level of finish of the product depicted?	1. Sketch/Concept 2. Technical Drawing 3. 3D model/ CAD model 4. Physical representation 5. Looks like a useable product
Demo	How well is the product demonstrated in a real situation?	1. Not at all ↓ 5. Can be in stores now
Excitement Level	How excited/captivated are you by this video?	1. Unmoved ↓ 5. Very excited

4.4 Tools Of Analysis

Information was gathered on each of the products, including the project goal (how much money they are asking for), funds raised, number of backers. From these values the average pledge for each project was determined. A “success coefficient”, Ψ , was also determined for each project such that,

$$\Psi = \frac{\text{Funds received}}{\text{Funds requested}}$$

These values are summarized in Tables 3(a, b).

4.4.1 Spearman Correlation [17,18]

Spearman's correlation coefficient, ρ , was used to measure the strength of association between the two ranked variables. These variables were the average rating of each video attribute, X_{ij} , and the 'success coefficient' of each video, Ψ_j ,

where i - video attribute (four in total)

j - video (eight in total).

The average ratings of each video attribute per video are summarized in Tables 4(a,b).

To determine ρ , the d_i^2 term must be found. This was done tabularly, for the I^{th} attribute, via the following steps:

1. The data was sorted by Ψ_j in the first column. The second column was added and assigned as ψ_j , the ranked values (1,2,3,...8) in ascending order of Ψ_j .
2. Next, the data was sorted by the now third column, X_{ij} . A fourth column, x_{ij} , was created and similarly assigned ranked values (1,2,3,...8).
3. A fifth column, d_i , was created that held the differences between the two rank columns (ψ_j and x_{ij}). The sixth column holds the value of d_i^2 .

The Spearman Coefficient, ρ , was then determined for each attribute via the following formula:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

where n = number of videos (eight).

Plots of X_{ij} vs. Ψ_j were made for each attribute and labeled with the corresponding ρ value. A log scale was used on the x-axis. See Figures 4(a-d) for these plots. Spearman Correlation was thus used to determine the strength of correlation between video attribute and success of project.

The closer the Spearman Correlation was to either +1 or -1, the stronger was the correlation between the video attribute and the 'success coefficient' of the video, i.e. the success of the project.

- .00-.19 "very weak"
- .20-.39 "weak"
- .40-.59 "moderate"
- .60-.79 "strong"
- .80-1.0 "very strong"

The fit of the data points on each plot should be as close to monotonic increasing or monotonic decreasing as possible, to represent a strong correlation.

5 RESULTS

5.1 Statistics Of Chosen Projects

Table 3a: Statistics of successfully funded projects

Video	Project Goal	Funds raised	No. Of backers	Average pledge	Success Coefficient Ψ
3Doodler	\$30,000	\$2,344,134	26,457	\$88.60	78.1
Smart Herb Garden	\$75,000	\$625,851	10,477	\$59.74	8.34
Pebble Watch	\$100,000	\$10,266,845	69,929	\$146.82	102.7
RigidBot 3D Printer	\$31,500	\$1,902,098	1,952	\$974.44	60.4

Table 3b: Statistics of unsuccessful projects

Instaprint	\$500,000	\$222,177	862	\$257.75	0.444
Suntrunks- Solar Power to go	\$36,900	\$3,255	27	\$120.56	0.088
EZ3D Desktop Printer	\$25,000	\$11,759	39	\$301.51	0.470
HubDock Bicycle Quick Release Rear Wheel	\$47,000	\$6,510	57	\$114.21	0.139

5.2 Summarized Survey Results

Table 4a: Survey results for successful projects: Average rank per attribute per video

Video Attribute, X_i	Average Rank			
	3Doodler	Smart Herb Garden	Pebble Watch	RigidBot 3D Printer
Trustworthiness	4.67	4.50	4.50	4.42
Product Finish	4.50	4.75	4.83	4.08
Demo	4.42	4.67	4.83	4.58
Excitement Level	4.00	4.67	4.83	4.33

Table 4b: Survey results for unsuccessful projects: Average rank per attribute per video

Video Attribute, X_i	Average Rank			
	Instaprint	Suntrunks Solar to go	EZ3D Desktop Printer	HubDock Bicycle Quick Release
Trustworthiness	4.17	3.83	3.83	4.17
Product Finish	3.83	4.08	3.42	4.17
Demo	3.92	3.25	1.17	4.08
Excitement Level	3.92	1.75	2.42	2.58

5.3 Spearman Correlation Calculations

Table 5a: Spearman Calculations for 'Trustworthiness'

Ψ_i	ψ_i (ranked)	X_{ij}	x_{ij} (ranked)	d_i	d_i^2
0.088	1	3.83	1	0	0
0.47	4	3.83	2	2	4
0.138	2	4.17	3	-1	1
0.444	3	4.17	4	-1	1
60.4	6	4.42	5	1	1
8.3	5	4.5	6	-1	1
102.6	8	4.5	7	1	1
78.1	7	4.67	8	-1	1

Table 5b: Spearman Calculations for 'Product Finish'

Ψ_i	ψ_i (ranked)	X_{ij}	x_{ij} (ranked)	d_i	d_i^2
0.47	4	3.42	1	3	9
0.444	3	3.83	2	1	1
0.088	1	4.08	3	-2	4
60.4	6	4.08	4	2	4
0.138	2	4.17	5	-3	9
78.1	7	4.5	6	1	1
8.3	5	4.75	7	-2	4
102.6	8	4.83	8	0	0

Table 5c: Spearman Calculations for 'Demo'

Ψ_i	ψ_i (ranked)	X_{ii}	x_{ii} (ranked)	d_i	d_i^2
0.47	4	1.17	1	3	9
0.088	1	3.25	2	-1	1
0.444	3	3.92	3	0	0
0.138	2	4.08	4	-2	4
78.1	7	4.42	5	2	4
60.4	6	4.58	6	0	0
8.3	5	4.67	7	-2	4
102.6	8	4.83	8	0	0

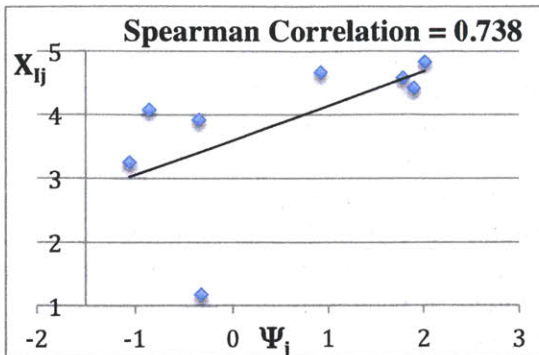
Table 5d: Spearman Calculations for 'Excitement Level'

Ψ_i	ψ_i (ranked)	X_{ii}	x_{ii} (ranked)	d_i	d_i^2
0.088	1	1.75	1	0	0
0.47	4	2.42	2	2	4
0.138	2	2.58	3	-1	1
0.444	3	3.92	4	-1	1
78.1	7	4	5	2	4
60.4	6	4.33	6	0	0
8.3	5	4.67	7	-2	4
102.6	8	4.83	8	0	0

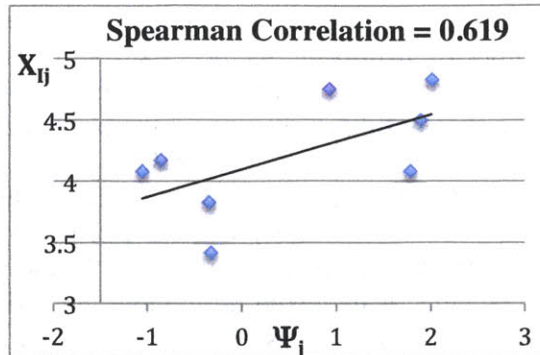
5.4 Spearman Correlation Results For Each Video Attribute

Table 6: Spearman Correlation of each attribute in descending order

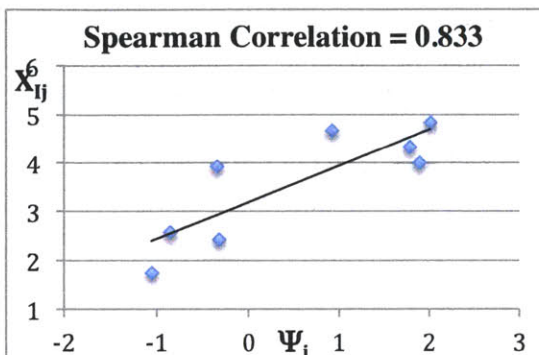
Video Attribute	Spearman Correlation, ρ
Trustworthiness	0.881
Excitement Level	0.833
Demo	0.738
Product Finish	0.619



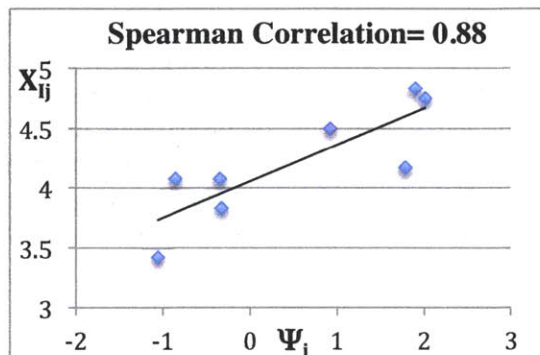
(a) Demo



(b) Product Finish



(c) Excitement Level



(d) Trustworthiness

Figures 4(a-d): Plots of Spearman Correlation for each video attribute

According to the Spearman correlations obtained, there seems to be a ‘strong’ to ‘very strong’ correlation between video attributes and success of the projects. The seeming trustworthiness of the projects’ creators, as presented in their videos, seems to have a particularly strong correlation with how much the projects get funded. It also seems to be important how exciting the videos themselves are.

5.5 Survey Comments

There were more comments, in general, for the unsuccessful projects. Participants, in other words, were more likely to leave negative comments than positive ones.

However for a couple videos of the successful projects, participants noticed that the advertised products were second models of existing products, invented by the project creators. The comments showed one place of issue with the successful videos. Namely, it was mentioned by two participants that the *Smart Herb Garden* video used sketches to demonstrate its uses, although there was an existing working (sellable) product. Participants suggested that this could be misleading as to the finish of the product. The *Pebble Watch* was praised as having exceeding amounts of demo.

The comments on videos of the unsuccessful projects were as follows. The creators of *Instaprint* seemed like “hippies”, and thus could become uncommitted to carrying through on their project. The project was unsuccessful although it too, like many of the successful projects, was an improvement of an existing product.

The video for *Suntrunks* had the most comments. In general, participants commented on the video’s poor quality. Although the product itself was shown, how it worked was not actually demonstrated: the creator gave hypothetical instances of use. The video looked like it was “made in the 90s”, and the creator’s style of presentation was lacking, as he talked throughout the entire video, as if he were giving a presentation. Indeed the business case was presented “in PowerPoint style” and there was too much information and thus “very boring”.

The video for the *EZ3D Desktop Printer* also seemed to give too much information all at once. The quality of the video style was poor and seemed to be a “first draft”. The creators talked about their incentives and the possible production problems that were likely, but did not demonstrate how their product actually worked. They mentioned that it was demonstrated in additional videos throughout the webpage, but according to a couple survey participants, viewers had no interest in following up.

For the HubDock video, the general consensus was that everything was fine, except the narrator sounded like he was “falling asleep” and thus led to the video being unexciting.

6 CONCLUSIONS

There seems to be a definite correlation between particular qualities of a project’s video and the success of the crowdfunding project, in the Technology domain. In particular, the more exciting a project video is, and the more trustworthy the project creators appear to the viewers, the higher the success rate of the projects.

The survey conducted for this study was not the most extensive considering the constraints of this specific project: as each participant was required to watch eight videos and answer eight sets of questions, it was obviously difficult to find willing participants. Furthermore, all the participants were MIT undergraduates, who may have a baseline understanding of product design, prototyping etc. This pool may not directly represent the average Kickstarter user browsing the Technology projects on the site.

With Technology projects in particular, it was evident via analysis, that project creators have to make tradeoffs, with respect to how much technical information they should give without overloading or boring their potential funders and also how dazzling they can make their pitch, without undermining the quality of their project. Thus potential entrepreneurs in Technology could have a hard time on crowdfunding sites if they do not understand that this balance must exist. At the same time, this potential problem is a good justification for why this area of research warrants some attention.

7 FUTURE WORK

Future work should expand this area of research to incorporate more than just Technology projects. It should also take into account further aspects, such as 'Opening Pitch', 'Level of Information Given', 'Clarity of Explanations' and 'Tone of Video'. This work should attempt to maintain other variables, as discussed in this thesis, as controls to optimize the accuracy of the results. The work presented here only scratches the surface of what is left to be discovered, on the road to determining what contributes to the success of crowdfunding projects.

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