

Predicting Highly Rated Crowdfunded Products

Vishal Sharma, Kyumin Lee

Utah State University, Worcester Polytechnic Institute
USA

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Presentation Outline

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 - Crowdfunding
 - Stages of Crowdfunding
 - Motivation
 - Research Objectives
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What is Crowdfunding?

- Crowdfunding is also known as *Online funding* or *peer-to-peer fundraising*
- Raising funds with collective effort from public
- A few facts about Crowdfunding:
 - Kickstarter is the most popular, 150th most visited website
 - Kickstarter reportedly has a success rate of about 45%



Stages of Crowdfunding on Kickstarter

Stage 1

- Launch product idea on Crowdfunding website
- Raise money from public

Stage 2

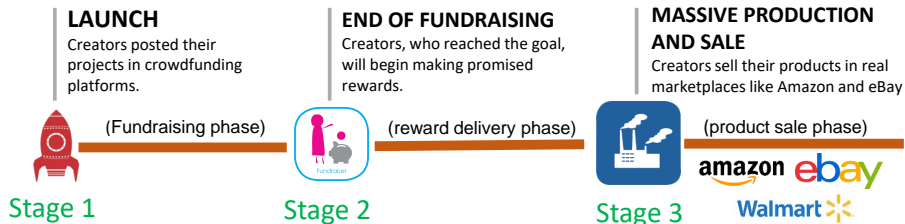
- End of fundrasing
- Deliver rewards

Stage 3

- Move product to production

Funding Phase

Production Phase



Stages of Crowdfunding

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Why is it important ?

Ex 1: Example of Unsuccessful Products on Amazon

MyKronoz smart watch

- Raised 500 times more money than goal
- Amazon rating 3.0



ZeTime: World's first smartwatch with hands over touchscreen

\$5,333,792

pledged of \$50,000 goal

26,828

📍 [Miami, FL](#)

[MyKronoz](#)

MyKronoz ZeTime Elite Hybrid Smartwatch 44mm with mechanical hands over a color touch screen – Brushed Silver/Milanese

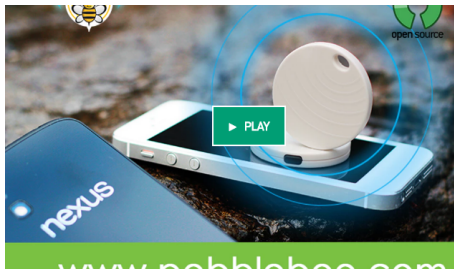
★ ★ ★ ☆ ☆ 94 customer reviews

| 63 answered questions

Ex 2: Example of Unsuccessful Products on Amazon

Pebblebee: finder

- Raised 11 times more money than goal
- Amazon rating 2.9



PebbleBee - The Most Affordable
iOS/Android Bluetooth Device

Issaquah, WA

Technology

Pebblebee

Pebblebee Honey Bluetooth
Tracking Device

★★★★☆ 202 customer reviews

53 answered questions

Best Deal

Price: \$23.96 ✓prime

\$218,844

pledged of \$20,000 goal

3,083

backers

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Research Objectives

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- RO1: We compare crowdfunded projects with traditional amazon products
- RO2: We analyze characteristics of successful (rating ≥ 4) and unsuccessful products (rating < 4)
- RO3: Using machine learning we predict success of Kickstarter products at several stages

RO1: Comparing Launchpad to Traditional products

Dataset Description	
Source	Number
Amazon Launchpad	3,082
Amazon Kickstarter	375
Amazon Dataset	82M

- Amazon Kickstarter \subset Amazon Launchpad
- Amazon Launchpad $\not\subset$ Amazon Dataset

Rating Distribution Comparison

- We analyze rating distribution of traditional and launchpad dataset
- Average Rating Distribution Comparison

Comparison		
Rating	Amazon Dataset	Amazon Launchpad
1.0	4,265,230 (5.2%)	27 (1.2%)
2.0	6,712,117 (8.1%)	108 (5.1%)
3.0	7,049,301 (8.5%)	685 (32.4%)
4.0	15,480,820 (18.7%)	961 (45.4%)
5.0	49,169,663 (59.5%)	336 (15.9%)
Avg. Rating	4.2	3.7

- We observe,
 - Skewed towards 5.0 and 4.0 for Amazon whereas Launchpad products towards 4.0 and 3.0
 - Avg. rating have a marginal gap of 0.5 (10%)

Rating Distribution Comparison (Conti.)

- Average rating distribution w.r.t category
- Electronics being lowest of all
- Avg. of 9.42% difference

Comparison		
Rating	Amazon Dataset	Amazon Launchpad
Electronics	4.01	3.14
Toys & Games	4.15	3.97
Home & Kitchen	4.19	3.76
Beauty & Personal	4.15	3.77
Sports & Outdoor	4.18	3.85
Avg. Rating	4.14	3.75

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- Overall we observe there are difference at both level of comparisons
- We conclude there are some gaps between both in terms of quality

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What makes a product successful ?

RO2: Characteristics of Successful and Unsuccessful products

Properties of successful and unsuccessful products

- Analyze if successful and unsuccessful products have different characteristics

Observations:

- Successful products had less number of FAQs
- Creators of successful products backed more number of projects
- Creators of successful products are more active on Facebook and Twitter
- Unsuccessful products had 69% more negative reviews

Mean of properties		
Properties	Unsuccessful	Successful
pledged money	\$528,400	\$313,800
FAQs	7.09	4.69
comments	934	1075
images	27.1	17.5
negative comments by backers	633	440
projects backed by creators	20.9	26.6
Facebook friends	359	773
lists created by creators	38	148.2
posted tweets	696	1,889
tweets liked by creators	1,397	1,734
Product Price on Amazon	\$107	\$83

RO3: Building Predictive Model

We split feature engineering process in 4 categories:

Kickstarter Project

- project goal, pledged money, a percentage of negative comments, readability scores descriptions etc.



Kickstarter Creator

- |created projects|, |linked external websites|, |backed projects|, account verified?, |Facebook friends|, etc.



Kickstarter Creator Twitter profile

- |tweets|, |followers|, |followees|, |favorites and number of lists|, etc. Missing values were replaced with mean

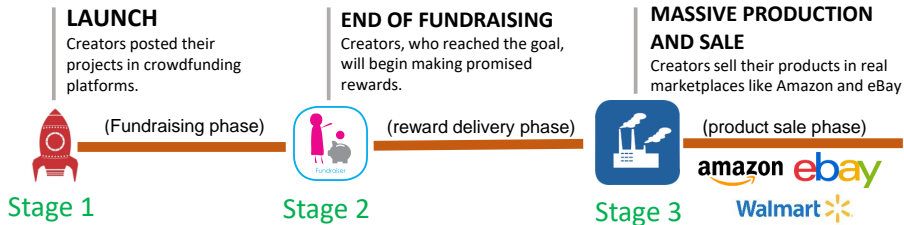


Amazon Product page

- category of the product, |images|, |videos|, product description length, technical details, similarity b/w title, product rating, etc.



Experiment and Results



Prediction Results (Accuracy)			
Algorithm	Stage 1	Stage 2	Stage 3
XGBoost	0.680	0.693	0.696
SVM	0.712	0.712	0.723
Gradient Boosting	0.714	0.728	0.720
AdaBoost	0.720	0.702	0.735
Random Forest	0.723	0.746	0.757

Conclusion and Future Work

- We observe, Launchpad products on average receive lower ratings on Amazon
 - We analyzed distinguishing properties of successful and unsuccessful projects
 - We built models to predict a projects success on Amazon
 - In future, we plan to expand this work to multiple crowdfunding & ecommerce websites
-
- **Questions:** vishal.sharma@usu.edu
 - **Dataset:** Will be uploaded soon to <http://web.cs.wpi.edu/~kmlee/data.html>



Feature Analysis

- Random Forest feature selection using mean decrease in Accuracy:

Top 5 Features		
Stage 1	Stage 2	Stage 3
# of images	# of creators	# of creators
project description length	# of images	# of images
reward desc readability	# of creators comments	product price on Amazon
# of backed projects	pledged money & goal ratio	# of superbackers comments
reward description length	# of backed Projects	# of FAQs

Successful projects:

- Were initiated by large number of creators
- Got more attention from Superbackers (# of comments)
- Less complicated (less FAQ's, lower price)