

# Sentiment Analysis Report

by  
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## A description of the dataset used

Data contains a list of over 34,000 consumer reviews for Amazon products like the Kindle, Fire TV Stick, and more provided by Datafiniti's Product Database. The dataset includes basic product information, rating, review text, and more for each product.

I wrote program which analyses reviews.text coulumn. I also included reviews.doRecommend and reviews.rating columns for evaluating accuracy of predictions.

## Details of the preprocessing steps

1. Load .csv file to Dataframe
2. Remove all columns except: reviews.text, reviews.doRecommend and reviews.rating
3. Remove all rows with NotAvailable reviews.
4. Remove stop words and punctuation with Natural Language Processing spaCy model en\_core\_web\_sm.
5. Calculate polarity of review with using textblob library.
6. Final Sentiment is decided based on polarity value.

Positive: polarity > 0.41

Neutral: polarity > 0.1

Negative: polarity <= 0.1

Take boundary polarity values "with grain of salt". It will require further analysis to check their validity.

## Evaluation of results

### Results:

reviews.doRecommend True

reviews.rating 5.0

Text: great for beginner or experienced person. Bought as a gift and she loves it

Polarity score: 0.7000000000000001

Sentiment: positive

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reviews.doRecommend True

reviews.rating 5.0

Text: Inexpensive tablet for him to use and learn on, step up from the NABI. He was thrilled with it, learn how to Skype on it already...

Polarity score: 0.6

Sentiment: positive

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reviews.doRecommend True

reviews.rating 4.0

Text: I've had my Fire HD 8 two weeks now and I love it. This tablet is a great value. We are Prime Members and that is where this tablet SHINES. I love being able to easily access all of the Prime content as well as movies you can download and watch later. This has a 1280/800 screen which has some really nice look to it its nice and crisp and very bright infact it is brighter then the ipad pro costing \$900 base model. The build on this fire is INSANELY AWESOME running at only 7.7mm thick and the smooth glossy feel on the back it is really amazing to hold its like the futuristic tab in ur hands.

Polarity score: 0.4322222222222223

Sentiment: positive

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reviews.doRecommend True

reviews.rating 4.0

Text: Great for e-reading on the go, nice and light weight, and for the price point given, definitely worth the purchase.

Polarity score: 0.5249999999999999

Sentiment: positive

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reviews.doRecommend False

reviews.rating 3.0

Text: I was hoping to use Google launcher with this tablet but it is really locked down and you cannot change the launcher or the lock screen. Still cheap and fine for watching movies.

Polarity score: 0.4083333333333333

Sentiment: neutral

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reviews.doRecommend False

reviews.rating 3.0

Text: The tablet works fine. It is responsive with good resolution. It is too tied to Amazon. It requires too many hoops to get apps such as Zinio to work. Until Amazon loosens its grip, I recommend only at a very good price.

Polarity score: 0.6055555555555555

Sentiment: positive

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reviews.doRecommend True

reviews.rating 2.0

Text: Didn't have some of the features I was looking for. Returned it the next day. May be good for others

Polarity score: 0.7

Sentiment: positive

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reviews.doRecommend False

reviews.rating 2.0

Text: Not a good product short battery life i can only use for 20 minutes

Polarity score: 0.35

Sentiment: neutral

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reviews.doRecommend False

reviews.rating 1.0

Text: i Bought this around black friday for \$60 hoping it would be awesome... it failed so hard i tried multiple different micro SD cards none of which were recognized and YES i formated them with every format i could think of ... Fat32, NTFS, Fat, Xfat... i even tried to have the tablet do it... didnt work... to make matters worse half the apps i wanted to use werent in the app store and i came to find out that it isnt linked to the normal google play store this tablet has its own app store which is missing many common apps... the main reason i bought this was to play clash of clans and i cant because it wasnt on the app store... i tried to also use aftermarket play stores to play COC but it didnt work... launched and played 1 time but didnt work or update after that... needless to say i returned it and bought a \$250 samsung galaxy tab A 10.1 (2016 version) with S-pen and its WAYYYYY better... bottom line you get what you pay for... also hint the s-pen version has an extra 1 GB of ram over the non pen version... so you should get that if you can afford the extra \$50...

Polarity score: -0.09345238095238094

Sentiment: negative

reviews.doRecommend

False

reviews.rating

1.0

Text: I bought this tablet for my 4 year old daughter. Too many advertisements. I would rather pay more and not have a single ad.

Polarity score: 0.01428571428571429

Sentiment: negative

Review1: great for beginner or experienced person. Bought as a gift and she loves it

Review2: Inexpensive tablet for him to use and learn on, step up from the NABI. He was thrilled with it, learn how to Skype on it already...

Similarity between Review1 and Review2: 0.7935413122974446

TextBlob library is very “naive and optimistic” and tends to set polarity score too high. Also it can be easily deceived by few positive words. Like: “Returned it the next day. May be **good for others**”. Even if user rated it with 2 stars and get rid of product at first opportunity, TextBlob awarded it with highest polarity score of 0.7.

On other hand 4 star Review with words: “I love it. This tablet is a great value. **INSANELY AWESOME**” got polarity score of 0.43.

## Insights into the model's strengths and limitations

**Strength:** Great for evaluating sentiment of long texts.

### Limitations:

No idea how TextBlob actually works, but my guess is that it only sums up good and bad words in block of text.

It doesn't understand nuances of human language and can be easily deceived.

User\_rating is still more accurate measure of sentiment.

Sometimes works better with un-preprocessed text.

**Example 1 – Expected negative score below -0.7**

Text: This product sucks

Polarity score of pre-processed text: 0.0

Polarity score of base text: -0.3

**Example 2 – Sarcastic negative review with positive words.**

Text: This tablet has real personality, every time I want it to do something, it always does anything else except what I want. And it is really good at it. Good day was when I bought it, great day will be when somebody gives me money for it.

Polarity score of pre-processed text: 0.6

Polarity score of base text: 0.6

**Example 3 – Same meaning as in Example 2, way lower polarity.**

Text: This tablet doesn't work, I want to get rid of it.

Polarity score of pre-processed text: 0.0

Polarity score of base text: 0.0