Intelligent Systems: NLP Project

Amazon Gift card customer reviews analysis

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1 Scope of work (Problem to solve)

As a part of NLP project we want to conduct analysis of Amazon Gift cards reviews, to understand how the customer react to them. Analysis of reviews is important tool to identify insights about customers to improve the product or service quality. With this investigation we want to identify the most popular occasions of the gift card purchase, emotions related to the gift, found out products people buy with such gifts, and expand overall knowledge about the Amazon gift cards to be even better suited for its current and potential customers.

Also we believe that, having conducted such investigation Amazon authorities could identify how the customer perceives the gift cards, assess the quality of the purchase process, in which period should the Gift Cards be advertised to increase purchased amount. Also, a great insight would be to understand the overall satisfaction level of Gift Cards. For this project we will use R library and apply such techniques:

- Association analysis
- N-gram analysis
- Sentimental analysis

The GitHub repository of the project with the full R-script could be found here.

2 Data description

The source of Amazon data we use for the analysis could be found here under "Gift Cards". The dataset ("2015GiftCard.scv") consists of 2,972 reviews and could be downloaded from the project repository here. Among all the available data in this dataset we will use "reviewText" which is a raw text posted by Amazon customers.

3 Analysis (Experiments conducted)

3.1 Association analysis

First of all we want to investigate and elaborate on selected associations with one of the most popular words mentioned in the reviews in figure 1.

From the most frequent words one could infer that Amazon Gift Cards always receives positive feedbacks claiming them to be "great", "good", "perfect", "nice", etc. with no popular negative words. Also we could find out that it might be a popular gift for "Christmas", "Birthday" is also in top 40 most frequent.

Implementing the association analysis with selected words that customer claim Amazon is cherished as seller that offers great deals, with suspiciousness in "pointless" that

we hope to investigate more later on. Analysis of "love" allowed us to identify a sample of the product line people loved. In general those are alcohol drinks, electric supplies, decor, costumes, watering supplies which also considered to be inexpensive.

Figure 1: The most popular words and selected associations

3.2 N-gram analysis

Having initial insights on customer perception in previous part we want to understand deeper some aspects of the Amazon Gift Card. For that purpose we construct Bi- and Trigrams.

In figure 2 we could find that customer are emphasise on "fast delivery", "easy use". Also one could find again "great deal" and "great product" that we already know. We see that there are a lot of continuous clients as they claim it to be "always great" and "worked perfectly" could mean that the process of obtaining the gift card runs smoothly and customers are satisfied with it. However, now we see that 4th popular is "go wrong" so we see that there is a huge number of customers that are claiming that sometimes something negative could happen either in terms of purchase-delivery process, or in terms of wrong satisfaction by the gift receiver.

Figure 2: The Bigrams and their wordcloud

Conducting the Trigrams we could enforce the customers' claim about fast delivery of the gift cards, ease of use, and hight satisfaction with seller and the product. Basically, we receive here the enhancement of previously identified insights
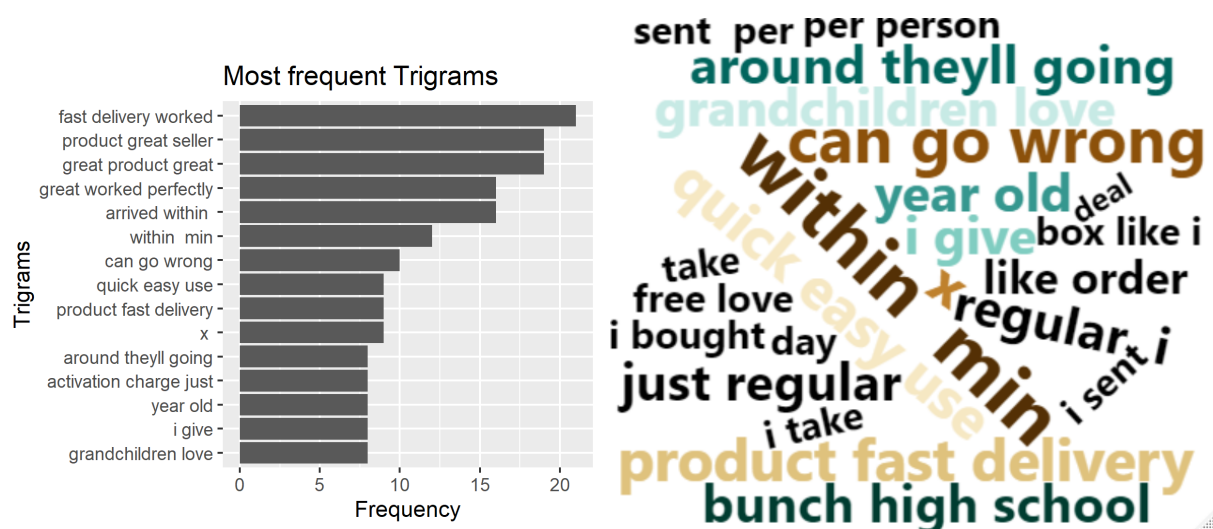

Figure 3: The Trigrams and their wordcloud

3.3 Sentiment analysis

In this chapter we conduct a sentiment analysis of the text to understand the overall emotionality of the reviews customers left. In order to conduct that we use libraries "SentimentAnalysis" and "syuzhet". With sentiment analysis of the first one we conduct positive-negative reviews split taking into account words mentions in them. For identification if the word is positive or negative we use QDAP dictionary which was specifically created for such tasks. As we could see from the figure 4 there is a strict dominance of positive reviews (2702) vs negative (37). This could suggest that overall, customers are mostly satisfied with Amazon Gift card
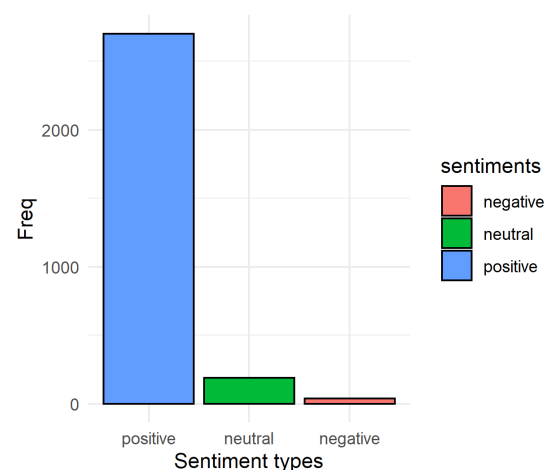

Figure 4: Positive and Negative reviews

During our investigation we wanted to explore further the sentiments of the reviews and found the library: "syuzhet". This library allows to split further the sentiments in the reviews to receive the overall picture of customers' impression of Amazon Gift Cards. In figure 5 one could find that the most popular feeling people have in relation to gift cards is joy, followed by anticipation and surprise. We could infer here that with their reviews they express expectations during the waiting period of the gift, along with experience of receiving the gift. Also, people tend to express fear which may be explained by uncertainty in gift purchase process or anxiety as the receiver of the gift may not like it. Of course, none of

the businesses could satisfy the needs of the customers by 100%, so we see some reviews where people express anger, sadness and disgust.
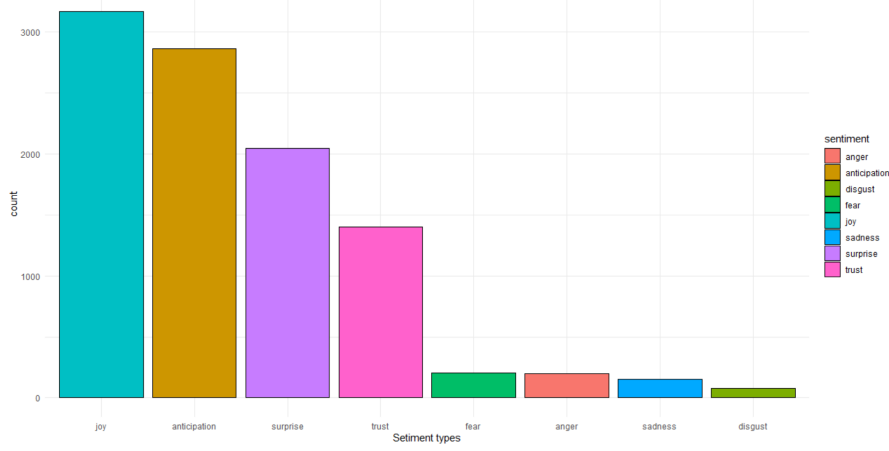

Figure 5: Detailed sentiments

4 Summary (Analysis of the results)

We conducted the analysis of reviews left by customers of Amazon regarding their experience of purchasing and presenting of gift cards.

As a result of our analysis we identified that gift cards have a high satisfaction level among customers, and the most popular events on which they are purchased are: Christmas and Birthday. This evidence is a good background for mass Christmas advertisement company, and individual pre-birthday commercials. It is also suggested, that the most popular items purchased by the gift cards are alcohol drinks, electric and watering supplies, decor and costumes. Overall, the price is considered appropriate ("inexpensive"). By virtue of N-gram analysis Amazon is good at fast delivery, ease of order and quality of the products it sells. However, some customers consider gifts purchased by the gift card to be regular or wrong match. Additionally, sentiment analysis of the reviews advises us that almost all the reviews were positive. Among positive reviews, people expressed mostly joy, anticipation and surprise as they, basically, expect the gift. One of the important positive factors is trust people have to Amazon which is highly valuable business achievement. On the other hand, there are still negative factors such as fear, anger, sadness and disgust people feel to the gift cards, but their proportion is small.

To sum up, regardless high satisfaction level, there is still work to be done in terms of improving recommender algorithms and purchase process of Amazon Gift Cards, that is believed to mitigate risks of fear, anger, sadness and disgust - the identified negative factors.