

Analysis of KLM's customer service on Twitter

SENTIMENT ANALYSIS ON TWEETS CONCERNING KLM AND COMPETITIVE AIRLINES

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INTRODUCTION

Twitter is becoming a bigger social media platform every year and with that companies interact more and more with their customers via this platform. Customer services that used to occur mainly via email or otherwise now largely occur on Twitter. This is also the case for KLM. KLM wants to know how well they are doing on Twitter compared to their competitors and find out if it's worth it to maintain an active social media presence to improve customer satisfaction.

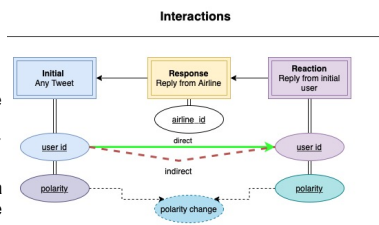
6 million tweets from May 22nd, 2019, to March 30th, 2020, were stored in an SQL database, splitting the data into 3 tables: tweets, users and places. This reduces the required storage space from 35 to 3.5 Gigabytes. From this data, the sentiment of relevant interactions will be analyzed to give our recommendations to KLM about their Twitter services.

CONVERSATIONS

We define a relevant conversation as a sequence of at least one interaction, possibly with more tweets in between.

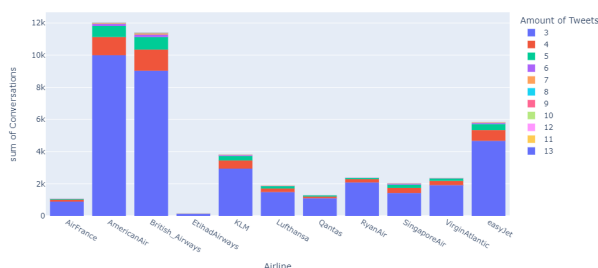
An interaction is defined as an initial tweet, an airline response to this tweet and a reply to the airline's response. We consider two types: direct and indirect. We store these interactions in a table and use that to extract the full conversations.

Direct interactions have same user, indirect have different users



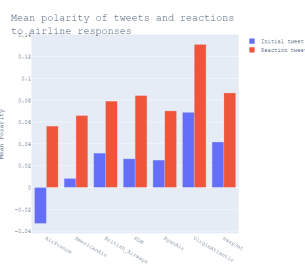
KLM has most conversations; most are 3 tweets long; other airlines have more longer conversations

Amount of conversations per length per airline

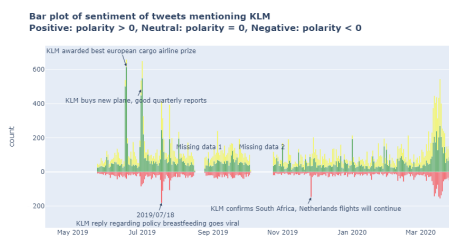


ANALYSIS RESULTS

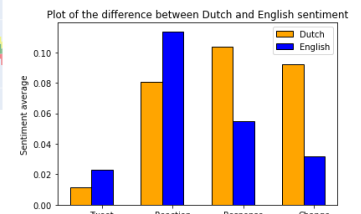
After considering other sentiment analysis methods, TextBlob turned out to be the best option for us. It has a relatively good accuracy at 66.8% and is easy to use. TextBlob rates the sentiment between -1 and 1, with -1 being the most negative and 1 the most positive. Reaction tweets are more positive across the board; initial tweets for KLM are among the least positive



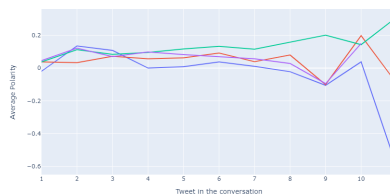
Timeline with relevant events for KLM that influenced sentiment; March 2020 is start of first lockdown



English and Dutch textblob yield similar results; English TextBlob accuracy: 66.8%; Dutch TextBlob accuracy: 62.8%

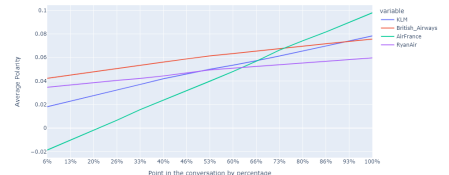


Average Sentiment at conversation length index (not including airline tweets)



KLM seems to get better results with sentiment improvement when conversations are longer. However, there aren't a lot of very long conversations, so this plot could be slightly misleading.

Average Sentiment at points in conversation (not including airline tweets)



This plot normalises the length of the conversation to avoid misleading results due to lack of data.

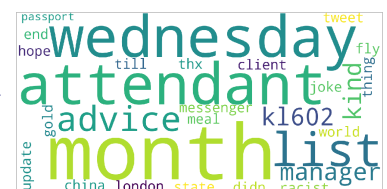
Places with most positive and most negative sentiment per airline



(legend shows most positive and negative places - in that order - for each airline)

The KLM crown lounge is the place for KLM with the most positive sentiment, while Geneva is the place with the most negative sentiment.

This wordcloud shows words of tweets where the sentiment doesn't improve when KLM responds. A common theme seems to be that issues with flight attendants (racism etc.) are not very easily solved over Twitter. Also the flight nr. KL602, which flies from Schiphol to LA, seems to be troublesome.



CONCLUSION

KLM is performing similarly to their competitors on Twitter. Sentiments are very neutral on average and improve very little after KLM's customer service. However, it would be best to keep the Twitter account active, since the other airlines are doing the same. One piece of advice to KLM would be to avoid redirecting to the regular customer service and try to solve a customer's problem then and there. A lot of the time customers only turn to the Twitter services after the internal customer services have been unhelpful. To really give any concrete advice to KLM however, we would need data from the internal customer services as well. Only then can we form a definitive opinion on whether the Twitter customer service is effective and if it's worth maintaining.