Understanding Public Opinion towards the Government of Bangladesh through Sentiment Analysis of Twitter

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Abstract

This study analyzed 45,000 tweets containing the keyword "Awami League" to understand public sentiment towards the government of Bangladesh from 2018-2022. Four different models were applied to the data, focusing on three significant events, including a tragic event in which two students were killed and the government's inaction sparked nationwide protests, labeled a, b, and c. The results provide insights into the government's turmoil and the factors contributing to changes in sentiment.

Introduction

It is disconcerting that the same government has remained in power in Bangladesh, a small country bordered by India on three sides, since 2008. From an outside perspective, it may seem that this is a minor issue, with the assumption being that the ruling party, the Awami League, has governed the country exceptionally well and therefore won successive elections. However, as someone who has lived in Bangladesh for the past two decades, I can say that there have been widespread reports of corruption during the 2014 and 2018 elections, leading to the Awami League's re-election on both occasions.

There are not only rumors of the current party coming into power through questionable means, but there have also been reports on them using intimidation tactics, such as hiring goons and using the police to silence protestors, to suppress any opposition. It is important to note, however, that the government has also contributed to the rapid economic growth of the country, with the GDP increasing by 111%from 2020 to 2022. Furthermore, their response to Covid during that time period was stellar. While it is crucial to address and condemn any instances of corruption and repression, it is also important to consider the full range of the government's actions and their impact on the nation.

For my final IPHS project, I will be analyzing 45,000 tweets containing the keyword "Awami League" and creating a visual representation of the sentiment towards the government during significant events that impacted the nation. This will allow me to gain a deeper understanding of public sentiment towards the government at different points in time.

Methodology

To obtain the data for this analysis, a Twitter Developer Account was created and the keyword "Awami League" was used to scrape 45,000 tweets. The tweets were then cleaned and standardized using a Google Collaboratory notebook provided by Professor Chun, which involved converting Unicode emoji, emojicons, and slang terms to standard English. After the data cleaning process was completed, sentiment analysis was performed on the cleaned tweets. This involved calculating the sentiment values for all the tweets using multiple models, including Vader(a lexical model), TextBlob(a machine learning model), DistilBERT(a large language model), and Twitter RoBERTa(a large language model)(Rotulo, 2022). This enabled a more comprehensive and robust analysis of the sentiment towards the government as expressed on Twitter. To further analyze the sentiment over time, four sentiment arcs were plotted, as seen in figure 1. All four sentiment arcs had strong inter-model coherence. Due to the strong inter-model coherence, a Crux Detection was performed using the Twitter RoBERTa model to identify tweets corresponding with the peaks and valleys in the sentiment arcs(Figure 2.). This methodology allowed for a detailed analysis of the sentiment towards the "Awami League" as expressed on Twitter.

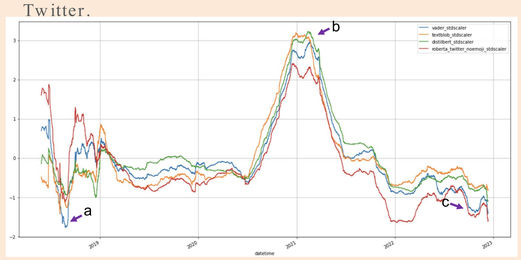

Figure 1. Sentiment Arc Model for 45000 Tweets with the Keyword "Awami League"

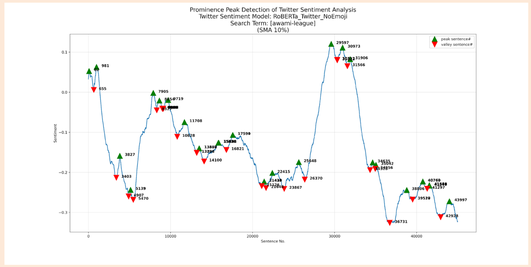

Figure 2. Prominence peak Crux Detection, for 45000 Tweets with the Keyword "Awami League"

Results

` Figure 1 shows the time-series data of four different models applied to the government's turmoil from 2018-2022. These models accurately depict the general shape of the data, with all four following a similar trend. For our analysis, we focused on the two valleys and one peak labeled a, b, and c in figure 1.

In region a, a significant dip in the data is observed. This dip corresponds to a tragic event in which two students were killed and the government's inaction sparked nationwide protests. These protests turned violent on August 2nd when police and government forces attacked the protesters. People from all around the country felt despair at that point and there was a global outcry with thousands of tweets tweeted surrounding said event. An amalgamation of said tweets resulted in valley A(Ahmed,Bard Wilkinson, 2018). Figures 3 and 4 obtained from the crux detection analysis(figure 2) summarize said sentiment and provide further insight into t

Figure 3. Tweet 1 for valley a

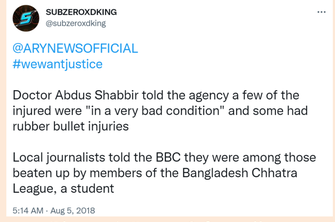

Figure 4. Tweet 2 for valley a

Region b shows a large peak, corresponding to more positive sentiment towards the government around 2021 due to their efficient handling of the pandemic, various positive tweets were tweeted out during this time period resulting in pe

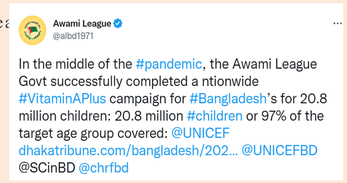

Figure 5. Tweet representing peak b

However, this was followed by a large dip in the data. In region c, the most recent time period, the public saw police open fire at the opposition party's office due to their calls for strikes, leading to turmoil in Dhaka, Bangladesh. There were thousands of tweets condemning the act. An example of a tweet capturing the sentiment of the people during this time is shown in Figure 6. Overall, our analysis of the time-series data reveals important insights into the government's turmoil and the factors contributing to changes in sentiment.

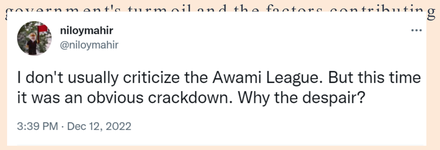

Figure 6.. Tweet representing valley c

Conclusion

In conclusion, our analysis of 45,000 tweets containing the keyword "Awami League" revealed that public sentiment towards the government of Bangladesh follows a cyclical pattern of negative, positive, and negative sentiment. This is depicted clearly in Figure 1. It is truly amazing how we can see trends in public sentiment via tracking tweets.

Future studies, further deep-diving into specific events, and then plotting sentiment arcs for said event could reveal further insights into how the public felt during specific time periods. Furthermore, topic modelling could be done to find direct keywords associated with said events.

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