

# A study of Irish consumer confidence using sentiment analysis of Twitter data during the COVID-19 pandemic

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## Summary

- The aim of the study is to show a correlation between sentiment displayed on Twitter and actual economic data concerning consumer confidence and provide future grounds for using social media as a tool to measure economic sentiment.



Source: KBC/ESRI Consumer Sentiment Index <https://www.kbc.ie/blog/consumer-sentiment-surveys>

## Problem Statement

- A study of how Irish consumer sentiment expressed through Twitter compared with usual ways of measuring consumer confidence provided by economic and financial bodies, has not been conducted to date.
- With the rapid rise in Twitter users in Ireland and due to the recent lockdowns, Irish users increasingly express their sentiments through online means, one of which is through tweets in Twitter.

## Introduction

- This research will explore the feasibility of sentiment analysis of Twitter data of Irish consumers to study whether or not the pandemic has affected their spending inclinations and purchase habits.
- This study will look at identifying relationships and correlations between economic research of Irish consumer confidence and sentiments captured from Twitter.

## Tools and Software to be used

- Several Python packages will be used to complete this research project.
- For scraping, I explored the Python libraries: Tweepy, GetOldTweets3, and SNScrape. However, the one that had no tweets limitation and API key restriction was Twint.



## Methodology

- The main concept of this project will be to scrape tweets from Irish Twitter users for the time period of March 2020 to the end of 2020.
- This project also requires data from the Economic and Social Research Institute of Ireland (ESRI).
- A correlation study between the data obtained from scraped tweets from the Irish Twitter API and the data provided by ESRI will be conducted.

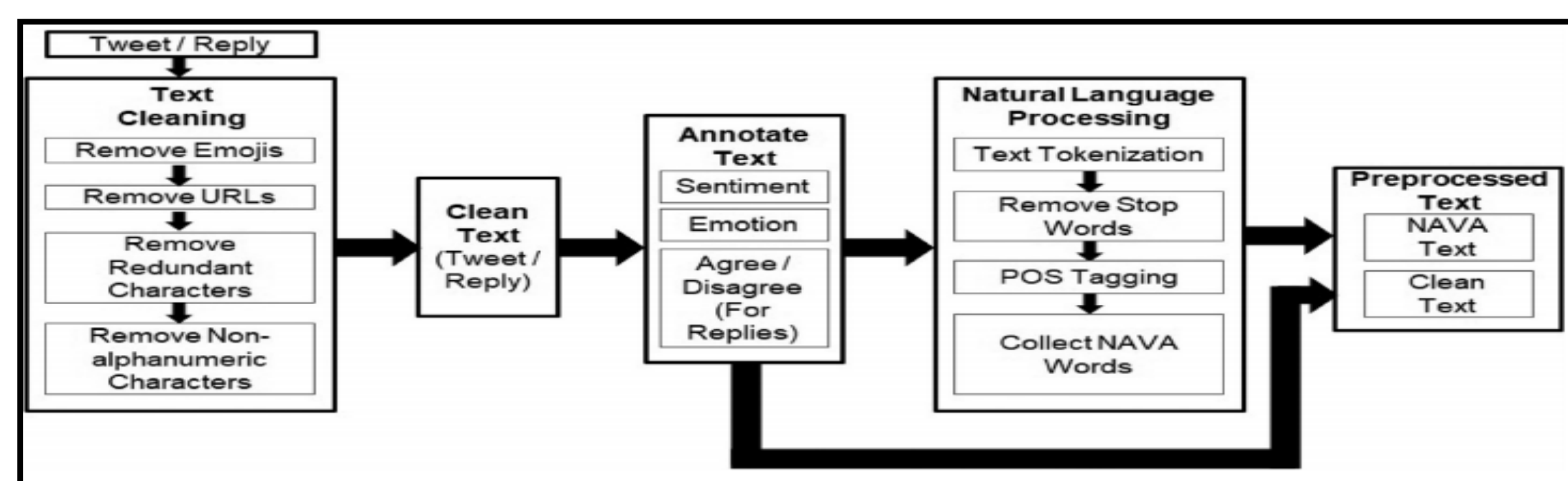


Diagram of cleaning the scraped tweets before sentiment analysis. <sup>1</sup>

## Recent trends in Twitter Sentiment analysis

- Quantitative predictors can be derived from text from public social media posts<sup>2</sup>.
- The K-Means and MajorClust methods of clustering were used in Pekar's paper in 2019 to forecast consumer spending<sup>2</sup>.
- Sentiment analysis done using emoticon sentiment could obtain rates of accuracy of more than 80%<sup>3</sup>.

## Comparison of Social Media Sentiment analysis of Consumer Purchasing Behaviour and Consumer Confidence Index

- A study conducted in Malaysia by Shayaa et al. (2017), found that the methodology to assess consumer confidence using questionnaires is restrictive compared with social media sentiment analysis.
- They found that Twitter sentiment analysis gave researchers a more honest and uninfluenced view of user emotions and sentiments<sup>4</sup>.

## Early Developments and Next Steps

- Scraping Irish Tweets through the Twint Python Library has been completed.
- The OECD Consumer Confidence index was selected over the ESRI/KBC dataset, as the OECD dataset can be expanded and used for other countries for future research expansion.
- Sentiment analysis using the cleaned scrape tweets is the next major step.

## References:

- Sailunaz, K. & Alhaji R. (2019). Emotion and Sentiment Analysis from Twitter Text, *Journal of Computational Science*, 36 (2019)
- Pekar, Viktor (2020). Purchase Intentions on Social Media as Predictors of Consumer Spending. *Proceedings of the Fourteenth International AAI Conference on Web and Social Media (ICWSM 2020)*, 14 (1), 554-556
- Peacock, D. & Khan, H. U. (2019). Effectiveness of Social Media Sentiment Analysis Tools with the support of emoticon/emoji. *Advances in Intelligent Systems and Computing*, 491-494.
- Shayaa, S., Al-Garadi M., Piprani A., Ashraf, M., & Sulaiman A. (2017). Social Media Sentiment Analysis of Consumer Purchasing Behaviour vs Consumer Confidence Index. *Proceedings of the International Conference on Big Data and Internet of Things -BDIOT2017*, 32-35