**Analysis of Twitter Sentiment for Excel, Power BI, and Python**

**Introduction**

Sentiment analysis is the process of analyzing text data to determine the emotions, attitudes, and opinions expressed in it. It is widely used in various fields such as marketing, customer service, and politics. In this project, we aim to perform sentiment analysis on a dataset of tweets for data analysis tools such as (Python, Power BI, Excel).

**Methodology**

**Data Collection**

The first step in this project was to collect the data. We used the Twitter API to collect tweets related to our topic of interest. We obtained the API keys and credentials from the Twitter Developer Portal and used the Tweepy library to collect tweets. We collected around 7,000 tweets related to our topic.

**Data Cleaning**

After collecting the data, we performed data cleaning to remove irrelevant or duplicate tweets. We removed tweets that were not related to our topic and removed duplicates using the tweet text as a unique identifier. The regular expression patterns were defined for each category to extract the tweets containing the category-specific keywords. The extract category function was used to extract the category from the tweet text. The tweets were then stored in a Pandas DataFrame. The DataFrame was cleaned by removing duplicate tweets and adding a new column for the category.

**Sentiment Analysis**

We used the TextBlob library for sentiment analysis. TextBlob is a Python library that provides a simple API for natural language processing tasks, including sentiment analysis. We performed sentiment analysis on the cleaned data and categorized the tweets as positive, negative, or neutral.

**Data Visualization**

Finally, we visualized the results of the sentiment analysis using various charts and graphs. We used Python libraries such as Matplotlib and Seaborn to create bar charts and time series plots to visualize the distribution of sentiments over time and across different categories.

**Findings**

Our analysis revealed some interesting insights. We found that the majority of tweets were neutral and positive in sentiment, while a smaller proportion were negative. We also found that sentiment varied across different categories, with some categories having a higher proportion of tweets than the others. Specifically, Power BI is first with a percentage of 68.7%, second is Excel with a percentage of 23.2% and last is Python with a percentage of 8.1%.

The study also found that the tweet frequency varied throughout the period, with some days having more tweets than others. This could be due to various factors such as new releases, trending topics, or events related to the categories. The study has several limitations, including the small sample size and the reliance on Twitter data, which may not be representative of the general population. Future studies could use a larger sample size and explore other sources of data to validate the findings. Overall, our sentiment analysis of tweets provided valuable insights into the emotions, attitudes, and opinions expressed in tweets related to our topic of interest.