

Major Research Project
On
Social media tools for brand health and crisis survival (Sentiment Analysis)

Submitted By:

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MBA (2018-2020)

Under the guidance of:

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CERTIFICATE FROM GUIDE

This is to certify that the project titled “**Social media tools for brand health and crisis survival(Sentiment Analysis)**” is an academic work done by “**SUSHIL KUMAR**” submitted in partial fulfilment of the requirement for the award of the degree of “**Master of Business Administration**” from **Delhi School of Management**, under my guidance.

To the best of my knowledge and belief, the data and information presented by him in the project has not been submitted earlier elsewhere.

Signature of Guide

Signature of Head of Department

Mr. Mohit Beniwal
(Project Guide)
Assistant Professor

Prof. Rajan Yadav
(Head of Department)

DECLARATION

I, Sushil Kumar, student of MBA 2018-20 Batch of Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-42 declare that the Project titled “**Social media tools for brand health and crisis survival(Sentiment Analysis)**” submitted by me in fulfilment of the requirement for the award of the Degree of Masters of Business Administration is an original work conducted by me.

The information and data given in the report is authentic to the best of my knowledge. The report is not being submitted to any other university for the award of any other Degree, Diploma and/or Fellowship.

ACKNOWLEDGEMENT

The opportunity provided to me by my college, Delhi School of Management, of carrying out my research is one that holds high esteem and a great chance for learning and enhancement of my present knowledge. Therefore, I consider myself in extreme luck that I was offered this opportunity and provided with this unique and enriching opportunity to learn from some of the best in the respective field.

I would also like to use this opportunity to express my deep gratitude and a special thanks to my mentor, **Mr. Mohit Beniwal** for the unending support.

Sincerely,

Sushil Kumar

2K18/MBA/090

EXECUTIVE SUMMARY

I, Sushil Kumar (2K18/MBA/090) a student of Delhi School of Management- DTU, pursuing Masters of Business Administration has worked on my project titled “**Social media tools for brand health and crisis survival(Sentiment Analysis)**” . People increasingly look at social media applications as an important part of their daily life and more likely to move their interactions to the virtual platforms (i.e. Facebook, Instagram, LinkedIn and Twitter) . This, in turn, positively reflect on their orientations and behaviours toward all kinds of social media technology

In recent years, Social media marketing has attracted interests of many organisations, institutions, Non profit organisations. Also, social media marketing at times of crisis like natural disasters like floods, pollution and health emergencies has become common.

We know that, at present we are in a middle of a health pandemic “**COVID-19**” or commonly called corona virus health emergency, which has affected every single institution and business across the globe. My project deals with using **Sentiment analysis** on **twitter dataset** understanding how brands demonstrate social media marketing at times of crisis and understand the sentiment of their tweets and engagement among their followers. People worldwide are largely engaged and attached with the web 2.0 technology and Social media platforms. By the same token, businesses start looking at such technologies as effective mechanisms to interact more with their customers. People actively display their views and opinion on Twitter, it serves as a medium to help the common people to raise their concerns and have their opinions heard and valued.

The organisations taken up for the project are:

- Hindustan Unilever.
- Reliance Jio.
- Zomato.
- Amul.

The analysis is based on using Python to fetch tweets and further analysing their sentiments into positive, negative or neutral. Also to check on the followers, likes, number of re-tweets and other similar metrics. The analysis made from this project can surely help companies to plan their social media activities at times of various crisis like COVID-19 and in general to improve user experience.

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CHAPTER 1: INTRODUCTION

1.1 Background

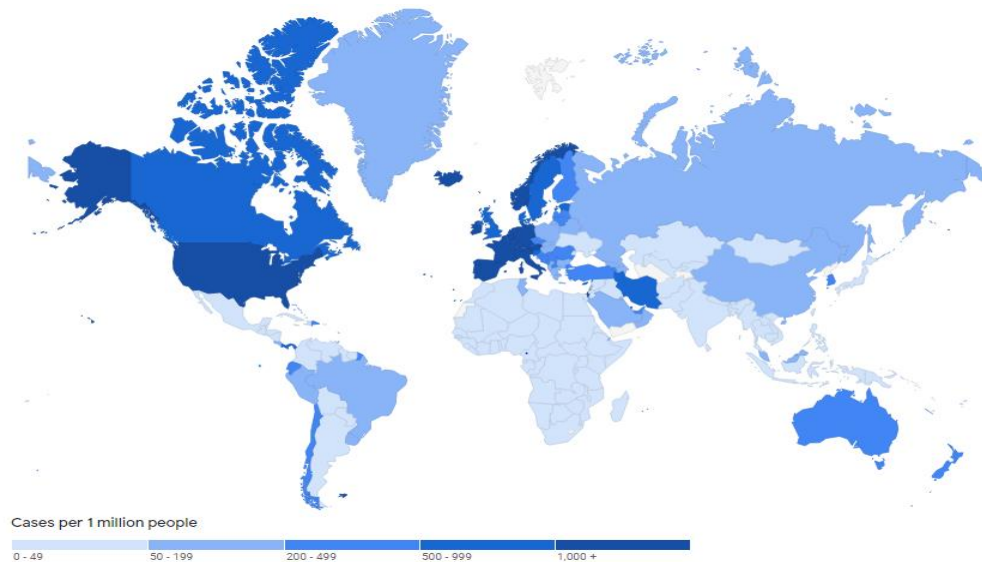
Over the years, there have been times when humanity is faced with challenges that have disrupted the global social, environmental and economic ecosystem.

Even today we are faced with a similar challenge and threat in the name of **COVID-19** or commonly known as the corona virus which has caused widespread anxiety and disruption. It goes without mentioning the human impact, the actual world scenario, direct health concerns of the pandemic, are the biggest concerns, but for those institutions and businesses trying to keep up with their activity, in synchronisation with this outbreak, there are many key considerations to be kept in mind.

As the virus has spread, the conversation around the outbreak has evolved on social media. In January at the beginning of the crisis, the city of Wuhan was the topic most associated with the virus on Twitter, with pneumonia being the top negative association.

By the period of February 22-28, pandemic replaced Wuhan as the topic most associated with corona virus, with South Korea becoming the next most associated topic. As the rate of the corona virus spreading in China has slowed, the conversation has become more focused on new outbreaks.

Fig 1.1 – COVID-19 Cases globally



Source – www.google.com

As it is said by Kotler that “Marketing is not something you do or don’t do”, “it is something you well or you do poorly”. This clearly explains the need of marketing even at the time of such crisis.

Social marketing is not a science, but rather a professional craft which relies on multiple scientific disciplines to create programs designed to influence human behaviour on a large scale. Commercial marketing targets purchase behaviours, product choice behaviours, and product promotion behaviours. People are asked to buy products, switch brands, and talk favorably about a company's

product. Social marketing typically targets complex, often socially controversial behaviours,

Social media has been largely realised as an effective mechanism that contributes to the firms' marketing aims and strategy; especially in the aspects related to customers' involvement, customer relationship management and communication.

Twitter is one of the most widely used social media micro blogging sites. Mining user opinions from social media data is not a straight forward task; it can be accomplished in different ways. In a paper an open source approach is presented, throughout which, twitter Microblogs data has been collected, pre-processed, analyzed and visualized using open source tools to perform text mining and sentiment analysis for analyzing user contributed online reviews about two giant retail stores in the UK. Collecting customer opinions can be expensive and time consuming task using conventional methods such as surveys. The sentiment analysis of the customer opinions makes it easier for businesses to understand their competitive value in a changing market and to understand their customer views about their products and services, which also provide an insight into future marketing strategies and decision making policies.

1.2 Objectives of Study

1. Sentiment Analysis of tweets from some major companies.
2. To implement an algorithm for automatic classification of text into positive and negative.
3. Word cloud analysis of tweets.
4. Quantitative visualisation of twitter dataset using Tableau.

CHAPTER 2: LITERATURE REVIEW

To gather literature of interest, different resources and databases were gathered which were available for free on the internet.

Works of various researchers were studied and analyzed to gain insight on various topics like Social Media analysis, Twitter analysis and Sentiment analysis thereby help to put forward the project “**Social media tools for brand health and crisis survival(Sentiment Analysis)**”.

As we know we are all amidst a health crisis **COVID-19**. Starting from Wuhan in China it has affected a million people around the globe. Now let’s see social media marketing role in health crisis.

Conducting serious research or making every-day decisions by us often look for other people's opinions. We consult political discussion forums when casting a political vote, read consumer reports when buying appliances, ask friends to recommend a restaurant for the evening. And now the Internet has made it possible to out the opinions of millions of people on everything from latest gadgets to political philosophies. Social media now commands over 22% of the world's total time spent online with 65% of adult internet users using some kind of social networking site². The Internet is increasingly both the forum for discussion and source of information for a growing number of people. As a response to the growing availability of informal, opinionated texts like blog posts and product review websites, Sentiment Analysis has sprung up in the past decade to address the question what do people feel about a certain topic, Bringing together researchers in computer science, computational linguistics, data mining, psychology, and even sociology, sentiment analysis expands the traditional fact-based text analysis to enable opinion-oriented information systems.

2.1 Social Media

Social media has generated a wealth of data. Billions of people tweet, sharing, post, and discuss every day. Due to this increased activity, social media platforms provide new opportunities for research about human behaviour, information diffusion, and influence propagation at a scale that is otherwise impossible. Social media data is a new treasure trove for data mining and predictive analytics. Since social media data differs from conventional data, it is imperative to study its unique characteristics. The paper (Morstatter and Liu, 2017) investigates data collection bias associated with social media. In particular, the authors propose computational methods to assess if there is bias due to the way a social media site makes its data available, to detect bias from data samples without access to the full data, and to mitigate bias by designing data collection strategies that maximize coverage to minimize bias. They also present a new kind of data bias stemming from API attacks with both algorithms, data, and validation results. This work demonstrates how some characteristics of social media data can be extensively studied and verified and how corresponding intervention mechanisms can be designed to overcome negative effects.

2.2 Social Media Analysis

Today people more and more look at social media platform as an imperative part of their daily life and more likely to move their exchanges to the virtual platforms (i.e. Facebook, Instagram, LinkedIn and Twitter). They can easily express their views, get feedback and engagement over the internet. This in turn, positively reflect on their orientations and behaviours toward all kinds of social media technology.

It is essential to differentiate between the term of social media and social networking. According to Wikipedia, social networking services could be acknowledged as “an electronic service, application, platform, or site used by people who have a common culture, beliefs, attitudes, interest, activities. Wikipedia addressed the concept of social media as tools which enable individual to broadcast as well as to approach more

people and more influence on them. Thus, Wells measured social networking as the use of social media means to directly contact and have interaction with personnel whom that one have a real relationship with or he or she would like to have a contact with.

We got an idea about social marketing now let us have a look on some for the commonly sought after definitions.

- **Social Media** - It is the technology or platform that facilitates development and sharing of content, views, opinions among organisations, government agencies and individuals.
- **Social Networking** – Using social media as a means to interact and contact someone and create a good lasting relationship.
- **Social Media Marketing** - This refers to use of Social Media technologies, platforms, channels or softwares to create, deliver and exchange offerings in terms of product or service that holds value for an organisation.

Social Media and Relationship Management

It is said the more competent organizations are to build and maintain social and emotional ties among their customers and with their brands, the more such organizations could have a close and solid relationship with those customers. In this regard, social media applications are important and are largely considered by firms worldwide to contribute to both customers experience and customer relationship management. While Facebook can play an important role in brand awareness, enhancing customer experience whereas Twitter plays an important role in achieving more interactivity and content management.

Social Media and Brand Health

Brand is basically a unique name, term or symbol that distinguishes a seller's products or services from its competitors. It becomes the identifying feature of a company,

product etc. Use of social media for branding is gaining a lot of interest from marketers all over the world. Social media finds its use in mostly creating brand awareness and helping in brand loyalty by better customer relationship management. It is found that brands exhibiting **Social Media Marketing at times of crisis** or disasters result in more brand loyalty. However, if the results are long lasting is still a question.

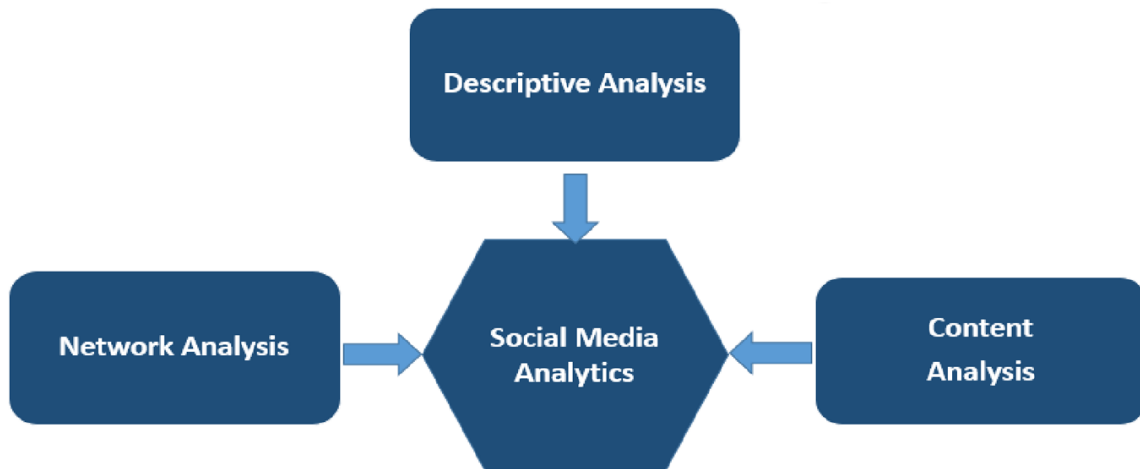
Most organisations globally have started thinking strategically how they can gain from social media to make sure that they reach their consumers actively as well as significantly contribute to their customer experience. In comparison to the traditional modes of marketing and communication(TV, Newspapers, ads) , social media portrays a more innovative, convenient and cost effective communication channel providing consumers with greater personalisation and interaction.

Analysis

Social media analytics is being widely used by companies to gain insights regarding products , the culture their organization has and used for decision making and planning the strategies. It is also widely used for product launch, establishing a good market place, reviewing your strengths, opportunities, weaknesses and competition. The fast paced growth in the users of social media is making it important to share the information online. It works as a great medium to gather information and feedback on products and services from its consumers. The most challenging part is to come to some proper and useful results and conclusions from the content.

Types of Social Media Analysis include:

Fig 2.2



Source - J. *Global Business Advancement*, Vol. 12.

Descriptive Analysis – This is used for comprehensive analysis of social media data. This include metrics like total count of followers, number of likes, number of hashtags, re-tweets(In case of twitter) etc. This type of Analysis provide basis for other metrics and also for analysis both from business as well as research perspective.

Content Analysis - Content Analysis talks about the semantic understanding from the content generated by the users. Word cloud analysis, Hashtag analysis , Sentiment Analysis are some types of content analysis. Hashtag and word cloud analysis also help users to interact on common topics or discussions with keywords and generate interactions.

Data in social media is present in unstructured form so there are many data preparation steps that need to be done before we can analyze it. Sentiment analysis on the other hands helps to classify content based on certain words into Positive, Negative and Neutral. Hence, Sentiment Analysis helps to form the Polarity as well as the Subjectivity of the content(Twitter in case of the project) .

Network Analysis – Network Analysis gives us a brief idea or an overview of the clusters, communities, networks or interest groups which take part in various organizations' discussions and interactions. Network Analysis helps us to understand behaviour using content on the social media with the help of network mechanism techniques like degree, closeness, nodes etc. Twitter users and their relationships are the basic terms which are used in network analysis. These terms and network further reveal interactions among users using different networks. Friendship networks are created based on the follower and following information.

Several studies show that social media analytics does not reveal the complete picture, but nonetheless, it is an important and indispensable means for gaining an overview of underlying insights.

2.3 Company Overview

Now, there have been 4 major companies taken up for the project and their tweets have been analyzed. These four companies are:

1. **Hindustan Unilever Limited(HUL)** - Hindustan Unilever is an Indian subsidiary of Unilever headquartered in Mumbai. It is basically a Fast Moving Consumer Good company. The company has some famous products like Bru coffee, Kissan, Dove, Axe, Pepsodent, Lifebuoy etc. Hindustan Unilever is quite famous for Social Marketing, from the advertisement related to saving water to Lifebuoy's recent advertisement raising awareness about the COVID-19, HUL has been quite significant in creating useful and user engaging content on social media. Its recent social message on washing hands and maintaining hygiene with any soap not just Lifebuoy gained a lot of praise and attention.

2. **Amul** – Amul is an Indian dairy cooperative society, based at Anand in the state of Gujarat. Formed in 1946, it is a cooperative brand managed by a cooperative body, the Gujarat Co-operative Milk Marketing Federation Ltd., which today is jointly owned by 3.6 million milk producers in Gujarat. Amul is known for its engaging content, the Amul girl has become a household name. Its topical tweets gain a lot of attention. Similar has been the case during COIVD19.

3. **Zomato**- Zomato is an Indian restaurant aggregator and food delivery start up founded 2008. Zomato provides information, menus and user-reviews of restaurants and also offers food delivery options. Zomato has been quite in news recently from its recent controversy to Zomato standing up during coronavirus , there have been abundant evidences of Social Marketing by Zomato. Zomato is also quite active on twitter, posting some witty content.

4. **Reliance Jio** - Reliance Jio Infocomm Limited, Jio, is an Indian telecommunications company and subsidiary of Reliance Industries, headquartered in Mumbai, Maharashtra, India. Jio is quite active on twitter and is also known for its corporate social responsibility and relief measures during crisis. Reliance Jio has a lot many followers on twitter and other social media platform.

Thus, the official Twitter handle of all the above companies is analyzed to assess the engagement, popularity and sentiment of its tweets and comparisons and visualizations have been made using **Python** and **Tableau**.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Problem Statement

The 4 companies chosen for Twitter Analysis are :

- Hindustan Unilever.
- Amul.
- Zomato.
- Relaince Jio.

Sample Size – A sample size of **100 tweets** per company was taken for the research.

Rationale

The **main rationale** behind choosing these companies is the above 4 companies are among the companies which are into **social media** and are quite active on twitter. With companies having quite a number of followers hence their analysis would be significant. It is believed that consumers long for responsible businesses and responsible brands. **HUL** and **RELIANCE** group are said to have led the way on sustainable living and are associated with social causes and high growth. HUL has been linked with online ads campaigns and posts for saving water, helping rural communities to grow with project “Shakti” and recent lifebuoy post on using any soap to wash hands regularly amidst Corona virus crisis. Amul on the other hand has sponsored various shows on doordarshan and keeps users engaged posting about them. Amul has ensured consistent supply of milk during lockdown. Similarly Zomato has stepped up during times of crisis. From delivering food during times of floods, to pairing up with restaurant owners to distribute leftover food to the unprivileged and free delivery of groceries during Corona virus, they have always kept users posted with their social and witty

content. Reliance Jio has also been in front in fight against corona virus with its discounted data saver packs, donations and work from home offers. Hence, their analysis would be viable to understand the sentiment of users. These companies have been pioneers in their domains hence they were chosen for research.

Sentence level Sentiment Analysis Twitter:

1. Given a message, decide whether a message is positive , negative or neutral. For messages conveying both a positive and negative sentiment , whichever is the stronger sentiment should be chosen.
2. Based on the frequency of words prepare a word cloud. The bigger words are used most often.

3.2 Scope of Study

The project has been done for Twitter Analysis on some famous brands but the study can be extended further. It can be used by political parties or people in general to check the response of public on their social campaign online, to check sentiments of users on their existing work or something they are planning to do, a campaign or an activity to raise awareness etc .

Similarly companies can also get reviews about their new product or newly released softwares etc by analysing the sentiment of the tweets.

3.3 Project Implementation

Sentiment Analysis basically consists of four major steps:

- **TOKENISATION** – This is the process of splitting sentence into words.
- **CLEANING THE DATA** - This refers to removing mentions, special characters, numbers from the sentences so we have only words left on which sentiment analysis can be done.
- **REMOVING STOP WORDS** - Words like “and”, “the”, “who” which do not contribute to the sentiment need to be removed.
- **CLASSIFICATION** – After data cleaning now the words are classified based on their sentiments into Positive, Negative and Neutral.

CHAPTER 4: DATA ANALYSIS

The project uses **Python** programming code and comprises of three major steps.

1. The first step is authorizing **the Twitter API client**, which connects Python to fetch the live tweets.
2. Request for accessing tweets and extracting them to data frame for analysis.
3. Use of libraries and algorithm to classify text of tweets into Positive, Negative and Neutral

Python has some inbuilt libraries which help in performing all the above functions with just few lines of code. The **Tweepy** library helps to fetch tweets from twitter. The **TextBlob** library is used for text processing part of “Natural Language Processing” and hence used for performing sentiment Analysis .

4.1 Program

Below are few snapshots of the Python code used in the following project.

Fig 4.1.1 – Accessing API Credentials

```
# Twitter Api Credentials
consumerKey = log["Key"][0]
consumerSecret = log["Key"][1]
accessToken = log["Key"][2]
accessTokenSecret = log["Key"][3]
#print(consumerKey)
```

Source - Own

Fig 4.1.2 – Authenticating Python

```
# Create the authentication object
authenticate = tweepy.OAuthHandler(consumerKey, consumerSecret)
# Set the access token and access token secret
authenticate.set_access_token(accessToken, accessTokenSecret)
# Creating the API object while passing in auth information
api = tweepy.API(authenticate, wait_on_rate_limit = True)
```

Source - Own

Fig 4.1.3 – Extracting Tweets

```
# Extract 100 tweets from the twitter user
posts = api.user_timeline(screen_name="@swiggy_in", count = 100, lang = "en", tweet_mode="extended")
```

Source – Own

Fig 4.1.4 – Cleaning Tweets

```
# Create a function to clean the tweets
def cleanTxt(text):
    text = re.sub('@[A-Za-z0-9]+', '', text) #Removing @mentions
    text = re.sub('#', '', text) # Removing '#' hash tag
    text = re.sub('RT[\s]+', '', text) # Removing RT
    text = re.sub('https?:\/\/\S+', '', text) # Removing hyperlink

    return text
```

Source – Own

Fig 4.1.5 – Sentiment Analysis

```
# Create two new columns 'Subjectivity' & 'Polarity'
df['Subjectivity'] = df['Tweets'].apply(getSubjectivity)
df['Polarity'] = df['Tweets'].apply(getPolarity)
```

Source – Own

Fig 4.1.6 – Word Cloud Analysis

```
#WordCloud
allWords = ' '.join([twts for twts in df['Tweets']])
wordCloud = WordCloud(width=700, height=500, random_state=21, max_font_size=110).generate(allWords)

plt.imshow(wordCloud, interpolation="bilinear")
plt.axis('off')
plt.show()
```

Source – Own

Fig 4.1.7 – Scatter plot

```
# Plotting
plt.figure(figsize=(8,6))
for i in range(0, df.shape[0]):
    plt.scatter(df["Polarity"][i], df["Subjectivity"][i], color='Blue') # plt.scatter(x,y,color)

plt.title('Sentiment Analysis')
plt.xlabel('Polarity')
plt.ylabel('Subjectivity')
plt.show()
```

Source – Own

In a similar manner various parts of the code have been executed.

4.2 Analysis

100 recent tweets of the company have been analyzed to form a generalized view on sentiments that include the polarity and subjectivity of the tweets and also the frequency or words used and hence analysis has been made. All the factors will be studied for all the four brands one by one.

The codes which we will specify will provide us with two outputs:

A) Polarity: Defines the positivity or negativity of the text; it returns a float value in the range of “-1.0 to 1.0”, where ‘0.0’ indicates neutral, ‘+1’ indicates a very positive sentiment and ‘-1’ represents a very negative sentiment.

B) Subjectivity: Defines the text on the basis that how much of it is an opinion vs how factual it is; where ‘0.0’ is very objective and ‘1.0’ is very subjective.

1. Hindustan Unilever Limited(HUL)

Twitter Handle - @HUL_News

HUL tweets' snapshot after cleaning the tweets.

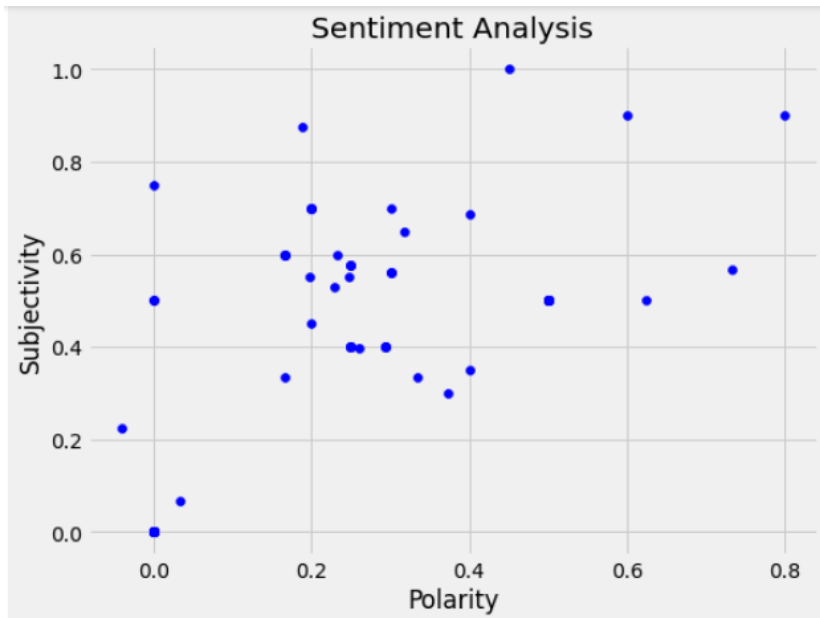
Fig 4.2.1

	Tweets	Subjectivity	Polarity	Analysis
0	We request you to share your contact details ...	0.000000	0.000000	Neutral
1	Hi, we understand your concern. Our team is w...	0.333333	0.166667	Positive
2	: हमें दिल खोलकर दान देना चाहिए, खासकर उन लोगो...	0.000000	0.000000	Neutral
3	Our forefathers spun the charkha with their ha...	0.566667	0.733333	Positive
4	_janaS06 Hi Suswagata, for us to assist you be...	0.500000	0.500000	Positive
5	: हम इसमें एक साथ हैं और हम इसे एक साथ हरा सकत...	0.000000	0.000000	Neutral
6	To win against COVID19, hand hygiene is essent...	0.350000	0.400000	Positive
7	Years ago, the people of India stepped outside...	0.300758	0.372727	Positive
8	Hi, for us to assist you better, we request y...	0.500000	0.500000	Positive
9	Hi, our expert would like to connect with you...	0.000000	0.000000	Neutral
10	Hi Mitesh, we have shared required informatio...	0.500000	0.000000	Neutral
11	1996 In the interim, we recommend you use any ...	0.000000	0.000000	Neutral
12	1996 We sincerely apologize for the inconvenie...	0.560000	0.300000	Positive
13	To all the medical and healthcare professional...	0.333333	0.333333	Positive
14	This WorldHealthDay, we reaffirm our commitmen...	0.000000	0.000000	Neutral

Source – Own

HUL's Scatter plot for sentiment analysis

Fig 4.2.2



Source – Own

This shows that the recent tweets by Hindustan Unilever are quite positive and factual only a very few are very Subjective.

They include famous tweets like:

Fig 4.2.3



Source – twitter.com

Another famous tweet to spread awareness about the COVID-19 crisis we had the following amazing and beautiful tweet.

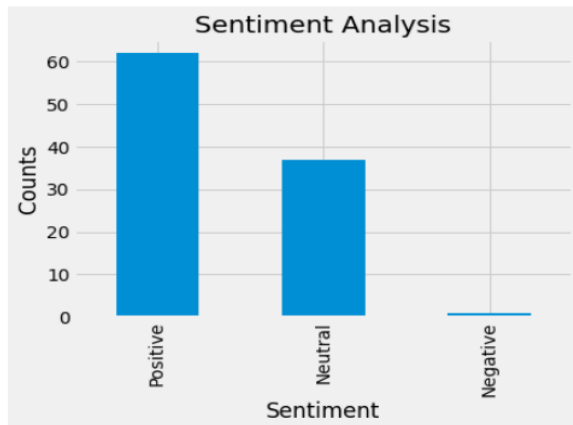
Fig 4.2.4



Source – twitter.com

So to summarize we have the following bar graph of these 100 tweets.

Fig 4.2.5



Source – Own

This clearly states how positive the consumers consider Hindustan Unilever's social tweets are and how well people consider it as a brand.

2. Reliance Jio

Twitter Handle - @reliancejio

Here's a snapshot of its tweets.

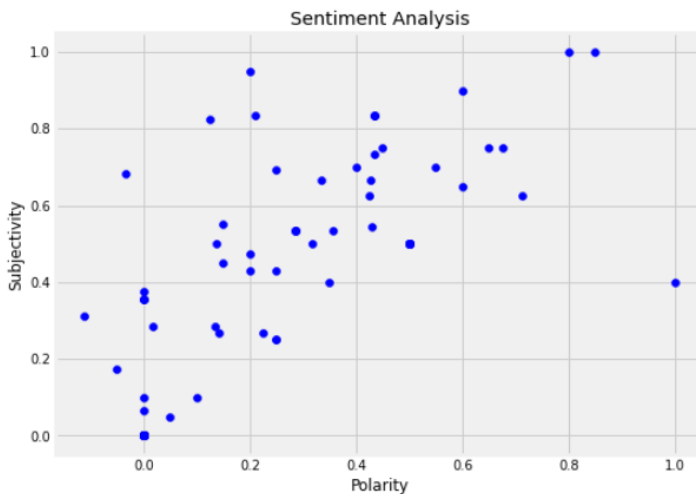
Fig 4.2.6

	Tweets	Subjectivity	Polarity	Analysis
0	The further we stay, the safer we are. \nPract...	0.283333	0.016667	Positive
1	We salute the Heroes from the RIL family who I...	0.500000	0.136364	Positive
2	Ghar rahega India, toh safe aur healthy rahega...	0.500000	0.500000	Positive
3	Meet Malaya Sahu, our Lockdown hero, who ensur...	0.000000	0.000000	Neutral
4	India, let's keep moving forward with the righ...	0.535714	0.285714	Positive
5	Stay connected to your loved ones, on Jio. \nS...	0.650000	0.600000	Positive
6	We are proud of Vanlalruata Chahangte, RD Lalh...	0.833333	0.211111	Positive
7	Use Freecharge and recharge your number in sim...	0.357143	0.000000	Neutral
8	In these unprecedented times, our heroes, Mr. ...	0.900000	0.600000	Positive
9	Have you changed your settings yet?\nCoronaHaa...	0.000000	0.000000	Neutral
10	Avoid stepping out. Get medical consultation f...	0.000000	0.000000	Neutral
11	Recharge your Jio number using MobiKwik in 4 e...	0.833333	0.433333	Positive
12	Lockdown hero of Jio, Santosha Sarasambi walke...	0.000000	0.000000	Neutral

Source- Own

The Scatter plot is as given below

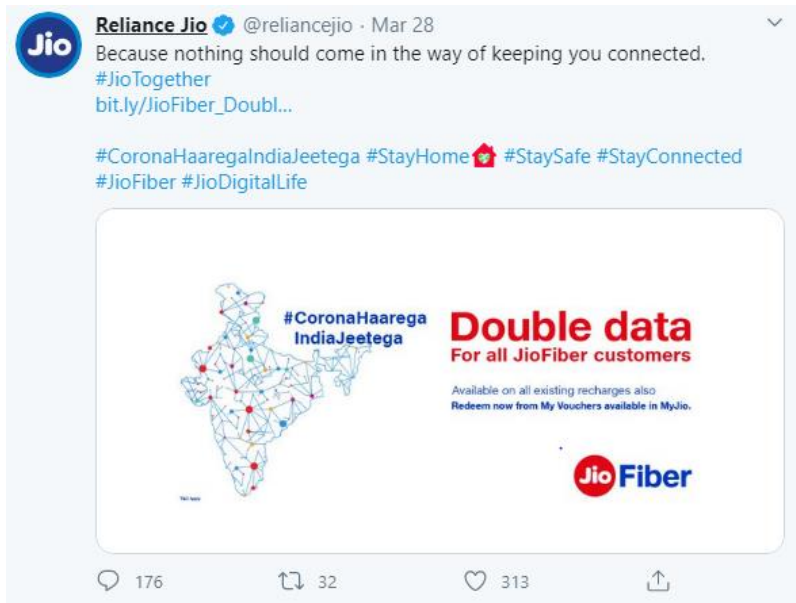
Fig 4.2.7



Source- Own

We can see even Reliance Jio has many positive sentiments among the masses because of its social media marketing. Reliance group has had many endeavors and efforts for fighting the corona virus. Some of them have gained quite popularity on twitter like:

Fig 4.2.8



Source – twitter.com

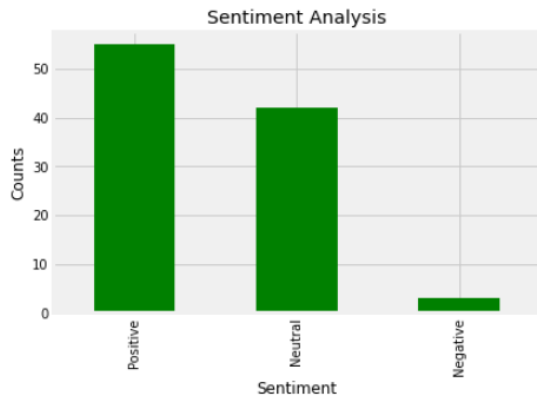
Fig 4.2.9



Source – twitter.com

So the entire 100 tweets can be displayed in form of a bar graph.

Fig 4.2.10



Source- Own

We can see how many of its tweets are positive and how much people trust the name.

3. Zomato

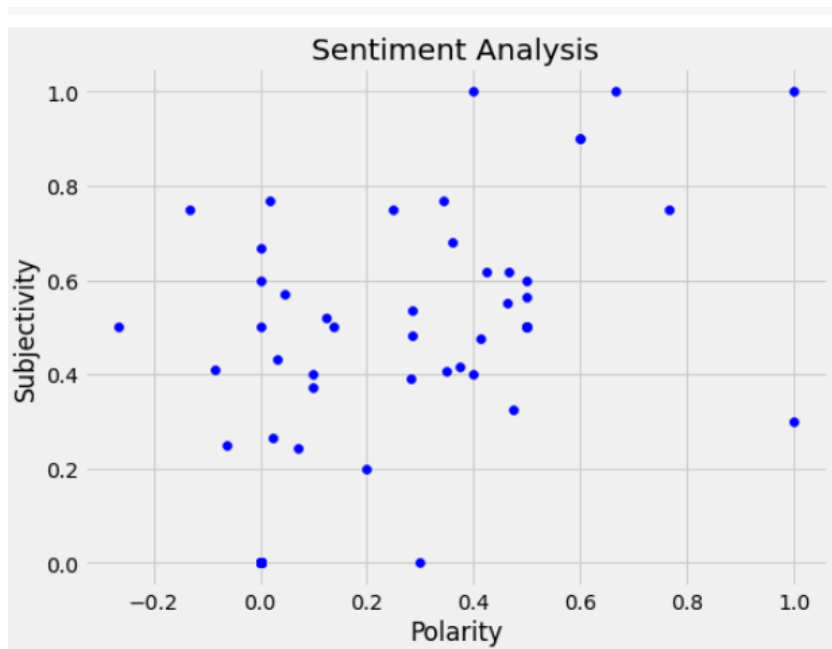
Twitter Handle - @ZomatoIN

Fig 4.2.11

	Tweets	Subjectivity	Polarity	Analysis
0	: 62714130 Yes, there's enough demand - not ev...	0.500000	0.000000	Neutral
1	some important charts 📊	1.000000	0.400000	Positive
2	what's something you reeaally want to have, b...	0.767857	0.017857	Positive
3	aaj dessert mein kya hai	0.000000	0.000000	Neutral
4	: At Zomato, we are doing everything we can to...	0.000000	0.000000	Neutral
5	: Images that move you. FeedTheDailyWager\n\n	0.000000	0.000000	Neutral
6	: Thanks to Feeding India, other NGOs and Goo...	0.483333	0.284722	Positive
7	: Update on 'Feed the Daily Wager'. \n\nWe've d...	0.242857	0.071429	Positive
8	_Creches: Keeping all our spirits high and hop...	0.570000	0.046667	Positive
9	: Some more food packets distributed with supp...	0.500000	0.500000	Positive
10	: We are just doing our duty ji. The country ...	0.535714	0.285714	Positive
11	: Hassle-free Hasselback potatoes !\n\n• Make ...	0.500000	-0.266667	Negative
12	: Our Hunger Heroes have been the backbone of ...	0.900000	0.600000	Positive

The scatter plot of Zomato's sentiment analysis is below:

Fig 4.2.12



Source- Own

This shows that subjectivity is high and the polarity is limited, meaning the nature of tweets is relative. Zomato has had many witty tweets and engaging content on COVID-19 crisis.

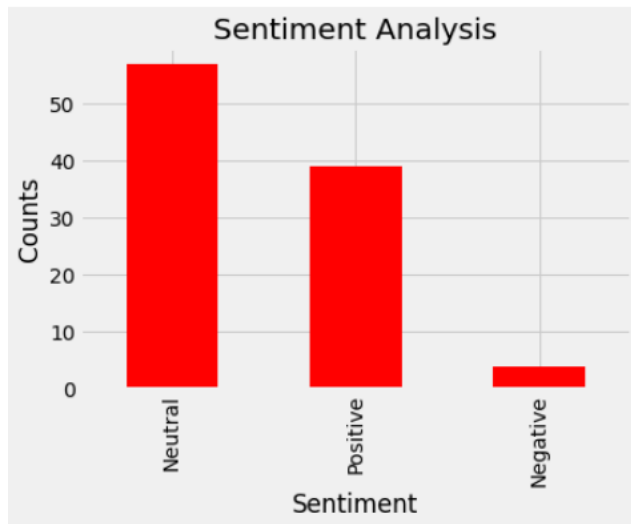
Fig 4.2.13



Source- twitter.com

To visualize the tweets we have the below bar graph.

Fig 4.2.14



Source- Own

This shows that most of the tweets are neutral and very few are negative. This shows that the one liners are mostly neutral.

4. Amul

Twitter Handle - @Amul_Coop

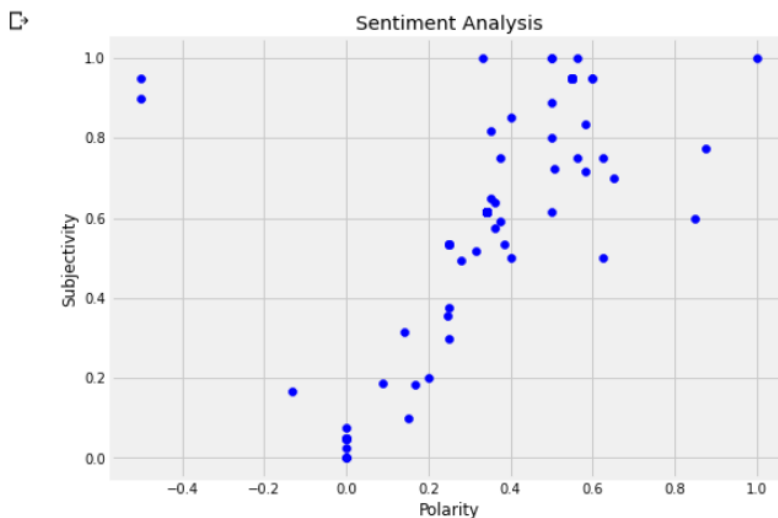
Fig 4.2.15

52	On Public Demand, we are pleased to share with...	0.533333	0.250000	Positive
53	On Public Demand, we are pleased to share with...	0.533333	0.250000	Positive
54	On Public Demand, we are pleased to share with...	0.533333	0.250000	Positive
55	On Public Demand, we are pleased to share with...	0.533333	0.250000	Positive
56	By popular demand, we are in a retro mode toda...	0.533333	0.383333	Positive
57	: These 9 minutes, at 9 PM on the 5th will bri...	0.000000	0.000000	Neutral
58	Amul Topical: PM urges countrymen to light can...	0.375000	0.250000	Positive
59	_Research: Join our TRALeadershipSeries with ...	0.750000	0.375000	Positive
60	While you sit at home and save the world, make...	0.888889	0.500000	Positive
61	Amul Topical: Iconic epics brought back by Doo...	0.183333	0.166667	Positive
62	Enjoy the chunks of rosogulla in the cool avat...	0.716667	0.583333	Positive
63	Amul Topical: On the 21 day nation-wide lockdo...	0.050000	0.000000	Neutral
64	Amul Topical: Tribute to Albert Uderzo, illust...	0.050000	0.000000	Neutral
65	Dr R S Sodhi, MD Amul would like to assure our...	0.076923	0.000000	Neutral
66	: JantaCurfew 'Spike in demand, but milk pro...	0.000000	0.000000	Neutral

Source – Own

Amul has the below scatter plot.

Fig 4.2.16



Source - Own

This shows that Amul has many Positive sentiments but the subjectivity is quite high. Amul has been quite witty and engaging on social media, twitter etc.

Some of them are:

Fig 4.2.17



Source – Own

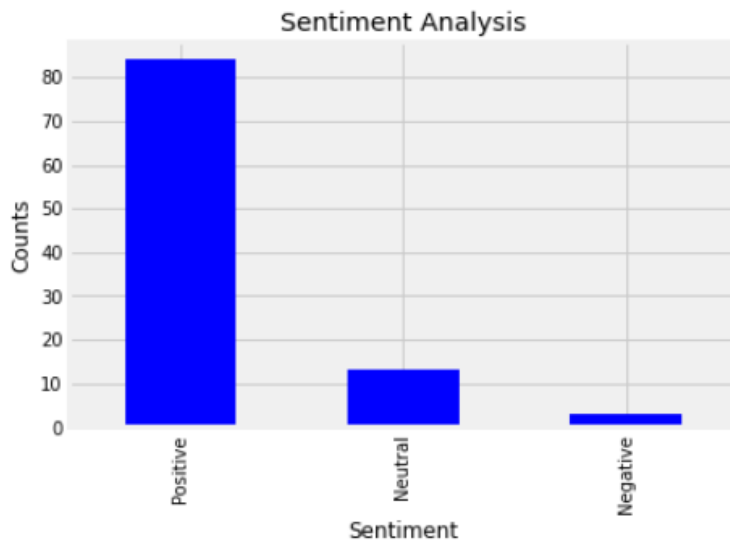
Fig 4.2.18



Source – Own

The graph detailing the 100 tweets is shown below:

Fig 4.2.19



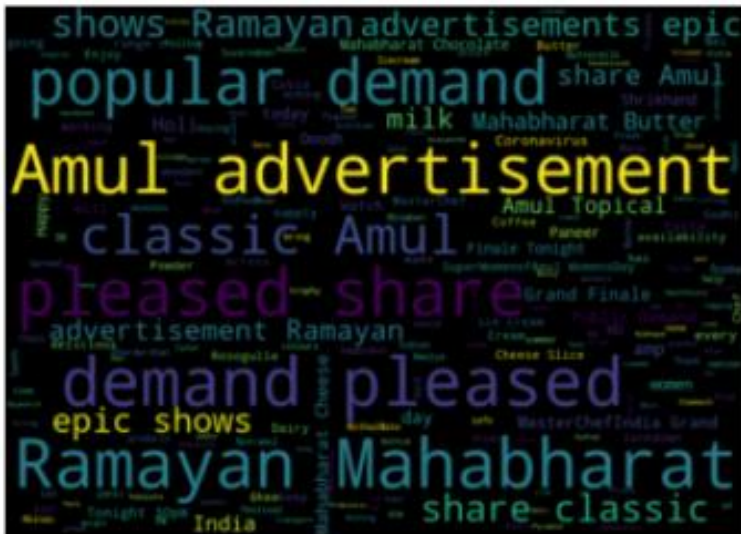
Source – Own

This clearly shows how Amul has many positive tweets and very few negative or neutrals. Amul has a strong brand image..

Source – Own

4. Amul

Fig 4.2.23



Source – Own

4.1 Visualisation

Using **Tableau** the quantitative data of the twitter handles of the above mentioned companies is visualized

1. **Number of Followers** – The number of followers indicate while the majority have around 100K followers on Twitter, Reliance Jio is quite popular with 516K followers. The difference is substantial.

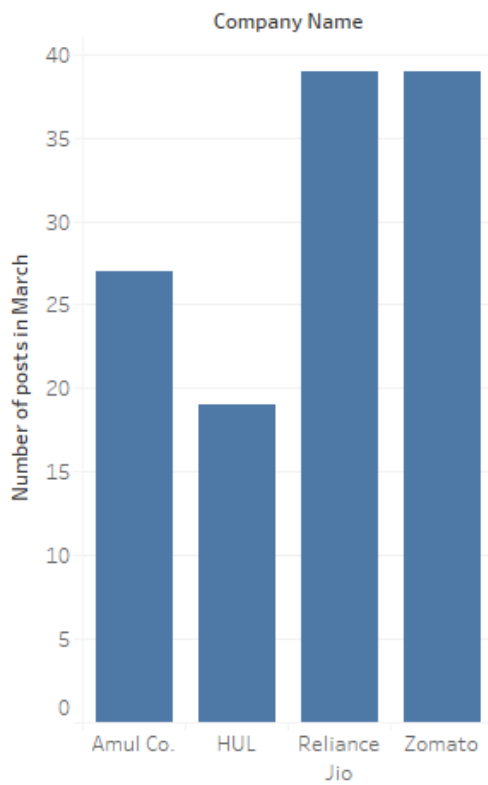
Fig 4.3.1



2. **No of Posts in March** – This shows Zomato and Reliance Jio of companies have been quite active during this time of crisis COVID-19, while Amul and HUL have also had considerable amount of posts.

Fig 4.3.2

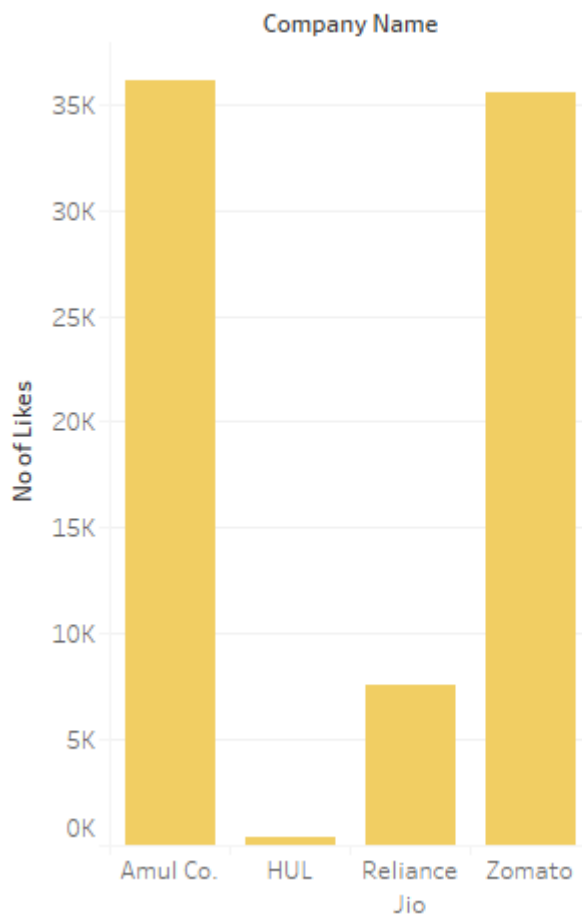
Number of posts in March



3. **Number of Likes** – More the number of posts more are the likes as for Zomato and Reliance Jio. Also there’s a reason where HUL and Amul mostly get their tweets retweeted by some celebrities and other handles which fetch them likes. Also Amul has a lot many likes as compared to the number of followers. Example – The tweet “Washing your hands with soap, not just Lifebuoy but any soap” got retweeted by Kajol’s handle and got 5800 likes.

Fig 4.3.3

Number of likes in March



4. **Number of retweets** – This shows the relevance and engagement of users with the tweets.

Fig 4.3.4

Number of retweets in March

Company Name	
Amul Co.	5,154
HUL	84
Reliance Jio	906
Zomato	3,569

CHAPTER 5: FINDINGS AND RECOMMENDATIONS

Twitter is more engaging and informative than any other social media platforms. It is ideal as varied consumers and eminent personalities. The unique feature of reaching out to an individual in Twitter via just their twitter handle without being mutual followers makes it easy for users to convey messages and increase the reachability. There's also a word limit on Tweets which calls for companies to have their tweets more catchy and engaging. From the study it was found out that out of the four given companies Reliance Jio has the highest number of followers given that it is a part of the bigger reliance group. It is also found out that Reliance Jio is quite active on twitter with 39 posts in one month. Zomato is also quite active with 39 posts in a month during crisis. While both Zomato and Amul have the highest number of likes. Infact Zomato and Amul have the highest number of likes to follower ratio, this can be attributed to its witty tweets during time of crisis to improve its brand health and identity. HUL having low number of followers and likes as it uses influencer marketing when famous celebrities retweet and gain popularity. Upon analyzing the word cloud we can see the popular and most used words during the times of crisis are as follows:

1. **Reliance Jio** – “Stay together, Corona Harega, Jio Connected, India Jeetega” these are in line with Reliance Jio mission to fight and increase its brand health during crisis.
2. **AMUL** – “Amul advertisement, Ramayan, Mahabharat, popular, demand” showing how it has been sponsoring the old classics and how they have been popular during times of crisis.
3. **HUL** – “stay, protected, hygiene, use soap, query” shows how clearly HUL is trying to build its brand along the lines of social awareness during crisis.
4. **Zomato** – “food, delivery, feed daily, restaurants, healthy, thank you” states Zomato has improved its brand health by delivering free groceries during time of corona virus.

Upon Sentiment Analysis it is found out that Amul has the highest number of positive tweets.

It can be recommended that the sample size can be increased to further analyze the sentiments in a better manner and also use better natural language processing algorithm to have an in depth analysis .

CHAPTER 6: LIMITATIONS

Interest in sentiment analysis is growing tremendously. But, although the field is emerging, it is still fairly new and the researcher can be confronted with challenges. One possible challenge relates to the nature of classification. In reality, there is usually a limit to the number of groups and subgroups that can be extracted, with most classification techniques generating two or three groups at most. Also, text based data are usually context specific and domain dependent, valid in specific places at specific times. Although there can be some translation, the validity of the translated text can be compromised by mistranslation. Additionally, postings on the internet can be difficult to analyze given that they often reflect shorter versions of phrases.

In the given project the research can be improved with better machine learning algorithms and more interactive graphs.

CONCLUSION

In this project, social media mining and sentiment analysis were used to analyze social media data for four industry-leading companies in India. Companies in the telecommunication, food, and technology sectors were chosen for analysis. Brand reports and infographics were used to describe the data, which were gathered from social media during the month of March 2020. Graphics and word clouds were used to show distributions of sentiment, followers, posts and likes. Hence, it can be concluded that Businesses always want to know public or consumer opinions about their products and services. Potential customers also want to know the opinions of previous customers users before they use a service or purchase a product. Opinion and sentiment analyses provide valuable information for placing advertisements on web pages.

Twitter analysis using Python depicts how flexible the research can be and how the various techniques like Sentiment Analysis, Word Cloud Analysis etc can be used by companies at times of crisis, pre and post crisis to compare the difference and find the correct time to market their new services, products and also see the peak time when their marketing strategies will be acknowledged by the consumers

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