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Analyzing the Role of Social Media Analytics in Evaluating Government Policies: A Case of "Make in India"

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ABSTRACT

In the era of digitalization customer's expectation is changing continuously so it's become very difficult to analyze the impact of products, services & policies so social media play an important role because in today's life no one have enough time to read all the tweets in detail and take the decision that may be a individual, organisation or government. In this study we analyze the behaviour, emotions, attitude and sentiment of the twitter users throughout the world those speak about the "Make in India" campaign using social media analytical tools. The data gathered for this research is scraped from the twitter in the form of tweets as 'CSV' file. The sentiment analysis is done through the R-Studio that represents the 10 different parameters related to the tweets and pictorial visualization of replied words in the word cloud that generated automatic by R-Studio. The objective of the study is to analyze the behaviour and views of the people towards this campaign and to know how much they support and like. This will help the individual, organisation, government and government agencies to know the satisfaction level of the citizens towards various product and social security schemes and this also help to managers, bureaucrats and ministers for gauge the success in their decisions and make suitable modification.

In the advanced age, client assumptions are continually developing, making it trying to examine the effect of items, administrations, and approaches. Web-based entertainment has arisen as an essential stage in this unique situation, as it considers speedy bits of knowledge into general suppositions and feelings. The "Make in India" crusade is no special case for this, and in this review, the scientists expect to dissect the way of behaving, feelings, disposition, and opinion of Twitter clients overall who examine the mission.

Keywords: Make in India, Sentiment Analysis, Analytical Tools, Word Cloud, Text Mining

INTRODUCTION

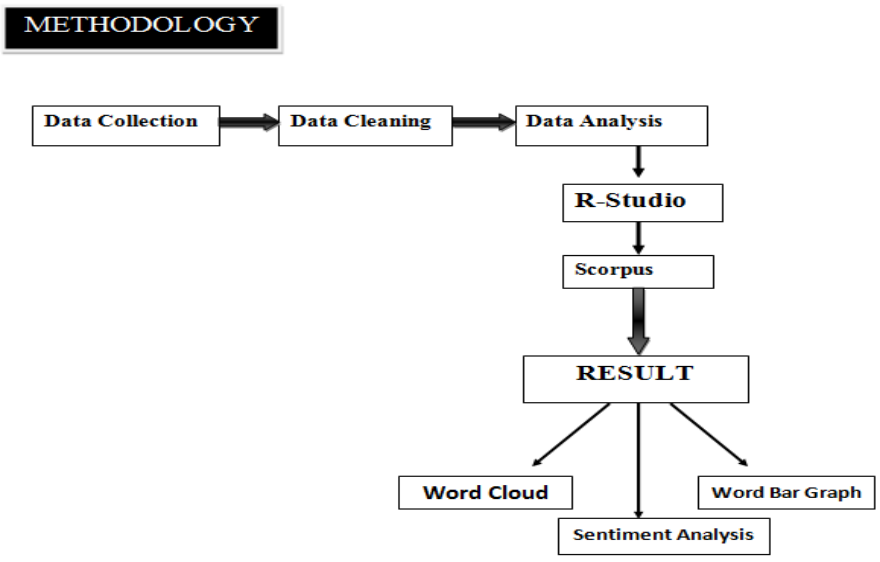
The Make in India was launched by Indian Prime Minister in 2014 as a set of nation-building initiatives. India is a largest democracy of the world and thinker's and investor's had a question related of the future growth of the Indian economy. Indian government had to take a big decision to provide a big push to the economy for which this campaign will introduce to convert to make India to be a manufacturing hub. To start a mission you need a proper strategy that motivate, inspires can be easily implemented. To boost the economic growth it is required to enhance the number of manufacturing industries and that boost the employment opportunities. India has largest working young population which usually known "Youth Factory" thus a potential to fulfill the needs of whole world. After the introduce of this campaign throughout world large number of countries showing their interest to take the benefit of skilled and cheap labour as well as easy availability of raw material this campaign going to change the supply chain of the world and have potential to provide the best quality products at low rates. To make this campaigning successful across the country, six industrial corridors are being developed and industrial cities will developed along these corridors. The Indian economy has the title of "fastest moving economy" of the world and at fifth position in that manufacturing sector contribution is 20% and through this campaign government was planned to take it 25% in coming few years. The main aim of Make in India campaign is to gear-up manufacturing sector and convert the India into manufacturing hub to enhance the employment and technological advancement. Prime Minister also makes the world aware about this campaign through international platforms and that helps to attract foreign direct investment (FDI) at this time India become one of the major country to

attract the huge amount of FDI from the other nations. The theme of "Make in India" campaign represent by elegant lion with Ashok Chakra and its design show success in all spheres.

Review of Literature –

Internet users regularly share millions of their ideas and viewpoints through microblogging platforms, providing a wealth of data for companies to analyze (Pak & Paroubek, 2010). People exhibit a strong inclination to express real-time opinions on microblogging websites as part of their daily routine (Agarwal, A., Xie, B., et al., 2011). Twitter offers a unique feature enabling users to disseminate theories and technology that can be employed for sentiment identification (Kumar & Sebastian, 2012). Traditional mass media relied on one-way communication for consumer interactions, but social media has since supplanted it, offering a platform for the creation and exchange of user-generated content (Gaikar, Marakarkandy, & Dasgupta, 2015). Sentiment analysis through natural language processing (NLP) tracks public opinions and views regarding specific products or services while also effectively gauging emotions and sentiments expressed in blog posts or reviews (Bharti & Malhotra, 2016). The advancement of technology has led to the generation of an immense volume of online data by internet users. Popular social networking sites like Facebook, Instagram, Twitter, and TripAdvisor serve as hubs where people share views, ideas, and engage with diverse communities worldwide (Vishal A. Kharde, S.S. Sonawane, 2016). Social media serves as a viable alternative to traditional surveys, offering real-time data and saving time and resources. Sentiment and polarity analysis impact factors serve as valuable predictors of real-time opinions shared by the public via social media platforms (Hao & Dai, 2016). "Make in India" mission is a futuristic vision that helps to boost the economy and make India to be a manufacturing hub. This mission plays a big role in success of India (Mishra & Taruna, 2016). Sentiment classification involves assessing textual content and expressing sentiments based on various factors, including positive, negative, and neutral opinions about policies, products, or services (Nakov, P., Ritter, A., et al., 2016). Social media serves as a gateway to access real-time data and information, with Twitter serving as a digital focal point where users converge for information related to issues or natural disasters (Sangameswar, Rao, & Satyanarayana, 2017). Sentiment analysis finds utility in various contexts, including gathering and analyzing online media text on different issues to assess opinions, sentiments, and emotions toward social and political events (rout, Choo, Dash, Bakshi, Jena, & Williams, 2018). Better business decision-making and planning can be achieved through forecasting and social media analysis. Various sources now offer modified code and algorithms to extract sentiments and emotions from social media data (Kabir, A.I., et. al., 2018). Tweets can be harnessed to forecast economic trends, money markets, and financial institutions, providing stakeholders and companies with valuable insights and opportunities (Juma & Alnsour, 2018).

RESEARCH METHODOLOGY –



This study conducted on the tweets those are scraped from twitter and stored in the csv file and this data is unstructured data. The extraction of tweets take place through the R- Studio for which 'developer account' was developed at twitter and by using the text mining application and in the application account various types of API Keys and Tokens are generated to scrap the tweets. In the further process of tweets extraction by getting the authorization from twitter by developing the 'Twitter Oauth' to extract the tweets using these keys and tokens. Text Mining package was used to extract the 5000 tweets on "Make in India" in English language. ***(Figure. 1).***

```
api_key <- '0x6wVeqrLBYTL---------------'
api_secret <- 'J38zfS188tCxAfBS06----------------------'
access_token <- '1092341316556591105-q-------------------------'
access_token_secret <- 'kcWjxaqyocsNrHdVA-------------------'

#Load library
library(twitteR)
setup_twitter_oauth (api_key, api_secret, access_token, access_token_secret)

#Getting tweets
tweets <- searchTwitter('Makeinindia', n=5000, lang = 'en')
tweets
tweetsdf <- twListToDF(tweets)
write.csv(tweetsdf, file = 'C:/Users/GOSWAMI/Desktop/tweets.csv', row.names = F)
tweets_text <- sapply(tweets, function(x) x$text)
```

Figure 1 Access Keys and coding for tweets extraction

Tweets are extracted in the form of 'csv' file in different 17 variables and having file name 'tweets'. ***(Figure 2)***

X	text	favorited	favoriteCount	replyToSN	created	truncated
3268	RT @moronhumor: Come 2020, there will be more Turni...	FALSE	0	NA	2019-02-19 00:47:49	FALSE
3269	RT @Indiamining: Amendments to the provisions of MM...	FALSE	0	NA	2019-02-19 00:37:24	FALSE
3270	RT @sway_hi: It's unbelievable that @RahulGandhi after...	FALSE	0	NA	2019-02-19 00:33:55	FALSE
3271	RT @cgisydney: Indian pharmaceuticals- a formula for su...	FALSE	0	NA	2019-02-19 00:29:27	FALSE
3272	"Don't take Panga (read #Bentayga)with an Autoricksha...	FALSE	7	NA	2019-02-19 00:29:03	TRUE
3273	RT @airnewsalerts: In a big step to promote the #MakeI...	FALSE	0	NA	2019-02-19 00:23:19	FALSE
3274	RT @cgisydney: Indian pharmaceuticals- a formula for su...	FALSE	0	NA	2019-02-19 00:18:24	FALSE
3275	RT @STPIHyderabad: Congratulations M/s. ENERGYTECH ...	FALSE	0	NA	2019-02-19 00:08:19	FALSE
3276	RT @SwamiGeetika: Make In India train makes a debut r...	FALSE	0	NA	2019-02-19 00:05:04	FALSE
3277	RT @airnewsalerts: In a big step to promote the #MakeI...	FALSE	0	NA	2019-02-19 00:03:50	FALSE
3278	RT @cgisydney: Indian pharmaceuticals- a formula for su...	FALSE	0	NA	2019-02-18 23:59:20	FALSE
3279	Indian pharmaceuticals- a formula for success #MakeInI...	FALSE	7	NA	2019-02-18 23:58:59	FALSE
3280	RT @Indiamining: The contribution of #mining to sustai...	FALSE	0	NA	2019-02-18 23:52:28	FALSE
3281	RT @airnewsalerts: In a big step to promote the #MakeI...	FALSE	0	NA	2019-02-18 23:46:01	FALSE
3282	RT @amitabhk87: #MakeInIndia has led to India jumpin...	FALSE	0	NA	2019-02-18 23:44:30	FALSE
3283	RT @pramit_b: In the first of a #ReportCard series taking...	FALSE	0	NA	2019-02-18 23:30:58	FALSE
3284	RT @dubeyamitabh: Hey @PiyushGoyal, about #Success...	FALSE	0	NA	2019-02-18 23:29:48	FALSE
3285	RT @RAC7R: This is more of political campaign against #...	FALSE	0	NA	2019-02-18 23:16:43	FALSE
3286	RT @amitabhk87: #MakeInIndia has led to India jumpin...	FALSE	0	NA	2019-02-18 23:13:34	FALSE
3287	RT @tusharkumr: @GreenRakshak a Biodegradable sani...	FALSE	0	NA	2019-02-18 23:12:52	FALSE
3288	@elonmusk @RickandMorty People say you are demi go...	FALSE	0	elonmusk	2019-02-18 23:00:08	TRUE

Figure 2. 5000 tweets CSV file

Complete analysis of the data was done on csv file of tweets in this tweets text is separated by using the corpus package and by using this unwanted content from the data was removed like punctuation, numbers, stop words etc so that clean data can be generated. By using the cleanset most common words like good, India, make etc are removed finally get the clean data that was used for subsequent analysis. ***(Figure 3)***

```
# Build corpus
library(tm)
library(NLP)
corpus <- iconv(tweets$text, to = "utf-8")
corpus <- Corpus(VectorSource(corpus))
inspect(corpus [1:5000])

# Clean text
corpus <-  tm_map (corpus, tolower)
inspect(corpus[1:5000])

corpus <- tm_map(corpus, removePunctuation)
inspect(corpus[1:5000])

corpus <- tm_map(corpus, removeNumbers)
inspect(corpus[1:5000])

cleanset <- tm_map(corpus, removeWords, stopwords('english'))
```

Figure 3 Data cleaned by using "Corpus"

In the further process of sentiment analysis TDM (Term Document Matrix) of clean set is generated to draw the pictorial graph of the repeated words in the tweets and also draw the descending graph of the words used in the tweets. The word cloud generated by using the word cloud package and highlights the most repeated and talked words in the mid of word cloud. The word having frequency more than 50 throughout the tweets was represented in the world cloud. These all steps are completed by using the R-Studio software as shown in ***(Figure 4)***

```
# Term document matrix
tdm <- TermDocumentMatrix(cleanset)
tdm
tdm <- as.matrix(tdm)
tdm [1:10,1:20]
# Bar plot
w <- sort(rowSums(tdm), decreasing = TRUE)
w <- subset(w, w>=200)
barplot(w,
        las= 2,
        col = rainbow(50))
# Word cloud
library(wordcloud)
w <- sort(rowSums(tdm), decreasing = TRUE)
set.seed(222)
wordcloud(words = names(w),
          freq = w,
          max.words = 1000,
          random.order = F,
          min.freq = 1,
          colors = brewer.pal(8, 'Dark2'),)
```

Figure 4 Coding & Formations of "Word Cloud"

Finding –

Tweets are extracted from the twitter related to the Make in India campaign further sentiment analysis of the tweets was done and visualization done through the bar graph as shown in figure.3

Performing sentiment analysis on tweets related to the Make in India campaign and visualizing the results using a bar graph (Figure 3) is an effective way to gain insights into public sentiment towards the campaign. By analyzing the sentiment of tweets, you can understand the overall emotional tone and perception of the campaign among Twitter users.

The bar graph likely represents the distribution of sentiment categories, such as positive, neutral, and negative sentiments, derived from the sentiment analysis. The sentiment analysis algorithm assigns each tweet to a specific sentiment category based on the language used in the tweet.

If the bar graph shows a higher number of tweets falling into the positive sentiment category, it indicates that a significant portion of the tweets related to the Make in India campaign carries positive emotions. This could include expressions of support, enthusiasm, excitement, and favorable opinions about the campaign.

Conversely, a lower number of tweets falling into the negative sentiment category suggests that negative emotions, such as criticism, skepticism, or disapproval, are less prevalent in the tweets related to the campaign.

The visualization of sentiment through a bar graph allows for a quick and easy understanding of the overall sentiment distribution, providing valuable insights into public opinion. This information can be useful for organizations, governments, and policymakers to assess the public's response to their initiatives and make informed decisions based on the sentiment analysis results.

Overall, sentiment analysis and visualization through a bar graph provide a powerful method for gauging public sentiment and understanding how the Make in India campaign is perceived by the Twitter community

	anger	anticipation	disgust	fear	joy	sadness	surprise	trust	negative	positive
1	0	1	0	0	3	0	1	3	0	5
2	0	3	0	0	2	0	1	2	0	4
3	2	1	3	0	2	2	1	2	5	2
4	0	1	0	0	5	0	0	4	1	7
5	0	1	0	0	2	0	0	1	0	3
6	0	1	0	0	3	0	0	2	0	4
7	0	1	0	0	1	0	2	2	0	2
8	0	2	0	0	2	0	1	2	0	2
9	0	2	0	0	4	0	2	5	0	6
10	0	2	0	0	4	0	1	4	1	6
11	0	2	0	0	5	0	2	2	0	9
12	0	0	0	0	1	0	0	1	0	4
13	0	3	0	0	1	1	1	2	1	3
14	0	2	0	0	4	0	2	4	0	5
15	0	1	0	0	1	0	0	1	1	3
16	1	0	0	1	1	1	1	1	2	3
17	0	0	0	0	2	0	1	2	0	3
18	0	2	0	0	2	0	1	2	0	2
19	0	1	0	0	1	0	1	1	0	2
20	0	1	0	0	1	0	1	2	0	4
21	0	2	0	0	2	0	1	2	0	3
22	0	2	0	0	2	0	1	2	0	5
23	0	3	0	0	3	1	1	3	1	7
24	0	1	0	0	5	0	2	4	0	8

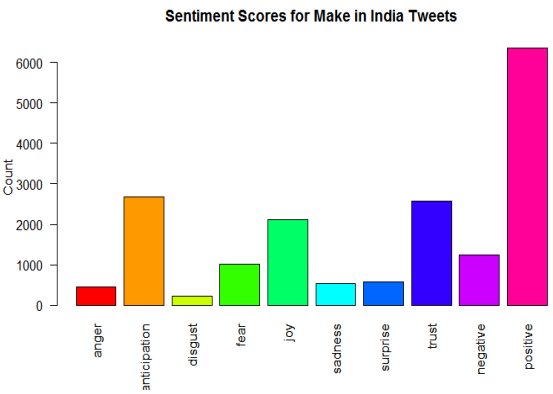


Figure 5 Sentiment score on different parameter and visualization

The sentiment score and the accompanying sentiment bar graph make it evident that the prevalence of positive words far outweighs the presence of negative words in the sentiment analysis of the "Make in India" campaign. This observation underscores the fact that a substantial majority of tweets associated with the campaign convey positive emotions, including anticipation, joy, trust, and positive responses.

Conversely, the use of negative words such as anger, disgust, fear, sadness, and negative responses is notably scarce in the sentiment analysis. This scarcity indicates strong favor and widespread support for the campaign among the general public. It appears that the campaign's ideas have been positively embraced by the public, and this support is prominently expressed through various social media channels.

Sentiment analysis serves as an invaluable tool for comprehending the overall sentiment and public perception surrounding a specific topic, such as a campaign or policy. In the context of the "Make in India" campaign, the overwhelmingly positive sentiment observed in the analysis suggests that the campaign has not only been well-received but has also garnered substantial positive feedback from the public.

For organizations and governments alike, the continuous monitoring of public sentiment through social media analytics is of paramount importance. This practice enables them to assess the effectiveness of their initiatives and make informed decisions based on the feedback of the general populace. Positive sentiment not only serves as an encouraging indicator of public support but also offers an opportunity to build upon and reinforce the campaign's success

Figure 6 Word Cloud of Make in India

Word cloud package of R-Studio is used to generate the tweets Word Cloud (***Figure 6).*** 'First' word is highlighted in the word cloud in India this type of campaign introduced first time. In this 'mission' word heavily used in the word cloud because this campaign takes place throughout the nation as a mission. 'Narender Modi' is also a highlighted word because this campaign is the creative idea and efforts are associated of our prime minister and integral part of this campaign. In the word cloud 'digital India' word is also highlighted that indicates digital India is also a initiative taken by PM Modi that play an important role in the success of this campaign another heavily used word in the word cloud is 'Built' that indicate the objective of this campaign because this campaign aim to convert our country to be a manufacturing hub and make our country Atamnirbhar and exports the goods and service throughout the world. The Bar graph is plotted that's show the 50 words those having maximum frequency (***Figure.7***)

It seems like you are describing a word cloud generated using the word cloud package in R-Studio. A word cloud is a visual representation of words where the size of each word is proportional to its frequency in the text data.

From your description:

- The word "First" is highlighted in the word cloud, indicating that the "Make in India" campaign was introduced for the first time in India.
- The word "Mission" appears heavily in the word cloud, suggesting that the campaign was promoted as a nationwide mission.
- "Narendra Modi" is also highlighted, indicating that the campaign was associated with the creative idea and efforts of the Prime Minister and was considered an integral part of the campaign.
- "Digital India" is another highlighted word, suggesting that it played a significant role in the success of the campaign. "Digital India" is another initiative taken by PM Modi.
- The word "Built" is frequently used in the word cloud, reflecting the objective of the campaign to transform India into a manufacturing hub, achieve self-reliance (Atmanirbhar), and expand exports of goods and services worldwide.

Additionally, you mentioned a bar graph (Figure 7) that shows the 50 words with the highest frequencies in the dataset, indicating the most commonly used words in the context of the "Make in India" campaign.

Word clouds and bar graphs are useful visualization tools for summarizing and understanding the most prominent terms in a text corpus and gaining insights into the prevailing themes and sentiments in the data. They provide a quick and

intuitive overview of the key concepts and topics related to a specific subject, such as the "Make in India" campaign in this case

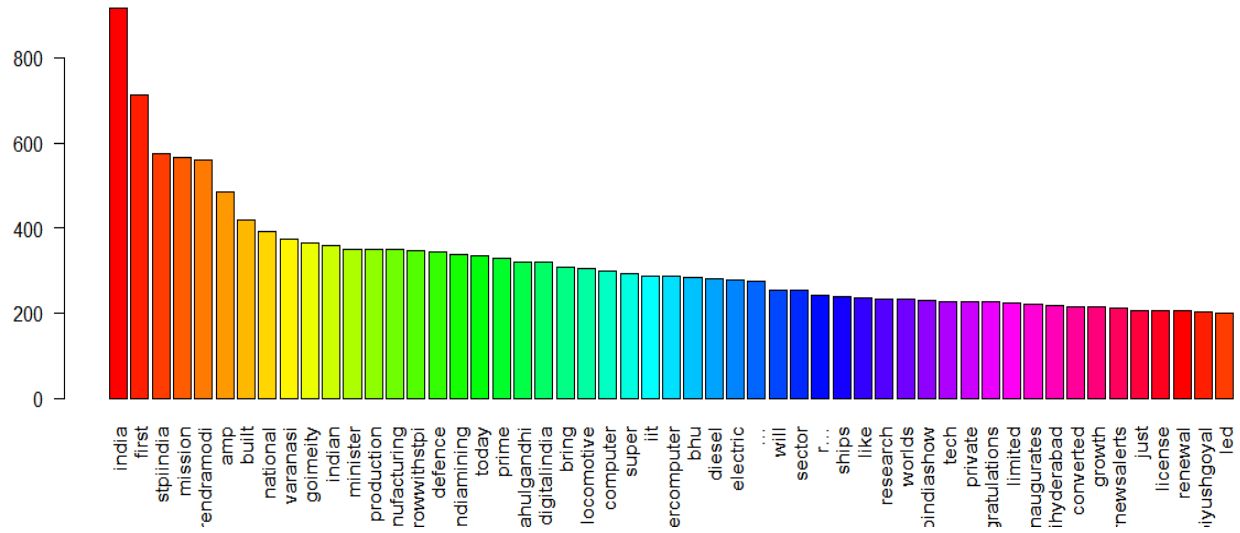


Figure 7 Top 50 words having maximum frequency in the tweets.

Implication –

Social media become one of the major platforms on which organization promote their products and services and highly used by the government and government agencies to promote their policies and schemes. In the same consumer also use the social media to provide their feedback and present their views and ideas related to these. So Social media analytics is very important tool for the organization, government and government agencies to evaluate their policies and welfare schemes and gain the valuable opinion and ideas of the public. Managers of the organization use social media to know the satisfaction level of the consumers and helps in taking suitable business decisions. The effectiveness of the policies has an implication for better future decisions making. Although the outcome of the policy can only be evaluated based on the factual data the opinion and thinking of the public can be judged using social media analytical tools. Social media also to make mid course correction in the policy if sentiment not in favour because this provide the real time the result to the government end organisation.

You are absolutely right. Social media has become a crucial platform for organizations and governments to promote their products, services, policies, and schemes. It also serves as a valuable channel for consumers to provide feedback, express their opinions, and share ideas related to these initiatives. Social media analytics plays a pivotal role in evaluating the effectiveness of these efforts and gaining valuable insights from the public.

For organizations, social media analytics can help managers assess the satisfaction level of their consumers and make informed business decisions. By monitoring social media conversations, they can identify trends, sentiments, and issues related to their products and services. This information can be used to improve customer satisfaction, address complaints promptly, and make necessary adjustments to their strategies.

Similarly, for governments and government agencies, social media analytics can provide real-time feedback on public sentiment regarding their policies and welfare schemes. This helps them gauge the level of public support or opposition and understand how the initiatives are perceived by the citizens. This real-time data can assist policymakers in making mid-course corrections, refining policies, and implementing changes based on public opinion.

However, it's important to recognize that social media analytics provides qualitative data based on the opinions and views expressed by the public. While it offers valuable insights into public sentiment, the actual outcomes and effectiveness of policies and schemes should be assessed using factual data and other quantitative measures.

In conclusion, social media analytics is a powerful tool for organizations and governments to stay connected with their target audience, gather valuable feedback, and make data-driven decisions to improve their products, services, policies, and welfare schemes. By leveraging social media data, they can adapt to changing public sentiment and ensure that their initiatives align with the needs and preferences of the people they serve.

Conclusion –

The analysis of the "Make in India" campaign, as described in the study, indicates that there were more tweets expressing positive emotions such as Joy, Trust, Anticipation, and Positive responses compared to negative emotions like Disgust, Anger, Fear, Sadness, and Negative responses. This suggests that the majority of people favored and supported the campaign, and they responded positively to the ideas presented through it.

Social media analytics like this can be beneficial for various organizations, governments, and government organizations. By analyzing the sentiments and opinions expressed by the public on social media platforms, policymakers can gain valuable insights into the acceptance and perception of their policies and campaigns. This data can help them make informed decisions and identify areas where modifications are required.

However, it's important to note that the success of a policy or campaign on social media does not guarantee its overall success in achieving its intended goals. Social media sentiment is just one aspect of public opinion, and it may not always reflect the actual impact or effectiveness of a policy. Public sentiment can change quickly, and there may be other factors influencing the success of a policy that cannot be fully captured through social media analytics alone.

Therefore, while social media analytics can provide valuable feedback and gauge public sentiment, it should be used in conjunction with other data sources and methods to make well-rounded and informed decisions regarding policy implementation and modifications

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