


# Public Sentiment on Ayodhya Verdict by the Supreme Court of India: A Temporal Analysis on Twitter Data

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## ABSTRACT

Social media has become one of the most important sources in understanding the opinions of people regarding important and trending topics. One such topic was the Supreme Court's verdict on the almost seven-decade-old Ayodhya land dispute case. On 9th November 2019, the apex court ordered that the disputed land in question be used for construction of Ram Temple. As it was one of the most anticipated judgements in India's history, Twitter was buzzing long before the date of verdict. To perform sentiment analysis, around 70,000 tweets pertaining to the verdict were collected from 26th Oct 2019 to 23rd Nov 2019. The dataset was then divided into three phases (i.e., pre-verdict, on day of verdict, and post-verdict), and NRC Lexicon has been used to analyze the results and extract positive, negative, and neutral tweets. Sentiment analysis of each phase indicates that the verdict has been accepted by the public.

## KEYWORDS

Babri Masjid, Lord Ram, Machine Learning, Natural Language Processing (NLP), NRC Emotion Lexicon, Ram Temple, Text Mining, Twitter, VADER

## 1. INTRODUCTION

This study has its moorings in the actual socio-political context of the Indian sub-continent. In India, religious sites play a crucial part in manifesting the right to freedom of religion which is also a fundamental right. They also represent different religious communities in a multi-lingual and a multi-religious state like India. India happens to be the only country in the world consisting of a large number of diverse religions co-existing together. Hinduism is known to be India's major religion which has existed for more than 4,000 years (Dayal & Garg, 2020). The origin of the Ayodhya dispute dates back 500 years ago in 1528-29 when Mughal emperor Babur had the Babri Masjid constructed on the site marking the spot of Lord Ram's birth. (Timeline: Ayodhya holy site crisis, 2012). Since then, there has been a tussle between the two communities for ownership of that piece of land measuring 1500 square yards in the town of Ayodhya. This dispute and its associated verdict has garnered a lot of attention both in print media as well as social media.

Microblogging websites have off lately become the go to repository for all sorts of varied data. This is due to the very nature of microblogs which enable the users to post their views, complaints, voice their opinions and express their sentiments on almost everything in a few words with a lot of

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ease. In fact, many organizations resort to these microblogs to understand and assess the opinion of general public on their products and services. Sentiment analysis is a technique to analyze these opinions, emotions and attitudes of people from text, speech, and database sources and classify them into categories like “positive” or “negative” or “neutral” (Bilal et al., 2019; Karami et al., 2020; Bonta & Janardhan, 2019). In the present study one such popular microblog- “Twitter” has been utilized to analyze the public sentiment on the Ayodhya land dispute case verdict by The Supreme Court of India.

The main objective of the study is to understand the opinions of the general public on the Ayodhya verdict on the basis of their twitter posts. To achieve this end, in this paper, sentiment analysis has been applied to identify, analyze and extract important and relevant sentiments from tweets posted by users pertaining to the judgement on the Ayodhya land dispute case. Twitter data related to Ayodhya verdict is collected over a period of four weeks and temporal analysis is performed to understand public sentiment. Section 2 presents the literature review pertaining to Ayodhya verdict and sentiment analysis. In section 3, the overall research methodology related to obtaining dataset and the basis of dividing it into three parts has been explained. Section 4 entails the complete and detailed analysis and findings of data and is sub-divided into parts pertaining to each phase. Section 5 presents the discussion section while section 6 addresses the limitations and future scope of the study, lastly, conclusion is presented in section 7.

## 2. REVIEW OF LITERATURE

As the present study entails understanding the public sentiment on Ayodhya verdict, the literature review is divided into two sections. The first section provides a historical background of the Ayodhya case, and the second section deals with literature survey on using Twitter data for performing sentiment analysis.

### 2.1 Ayodhya Verdict: Historical Context

The Hindu community claimed that it was the birthplace of Lord Ram, which was demolished upon the conquest of the Indian sub-continent by Mughal Emperor, Babur. Muslim community claimed that it was the place where historic Babri Masjid was built by the Mughal Emperor, Babur on vacant land. The dispute in these appeals arise out of four regular suits which were filed at different places by both communities between 1950 and 1989. The first suit was filed in the year 1950 by a Hindu worshipper in which he stated that it was his right to offer prayers at the main temple. In the year 1959 a case was filed by the Nirmohi Akhara for management of the temple. In 1961, Uttar Pradesh Sunni Central Board of Waqf staked their claim on the disputed site. In 1986, after 37 years, Faizabad district judge ordered to open the gates of Babri mosque, in favor of Hindu parties and allowed them to worship. Then Rajiv Gandhi govt allowed shilanyas at the site. Next to the Babri Masjid, The Vishwa Hindu Parishad (VHP), a Hindu nationalist organization formed in 1964, laid the foundation of a Ram Temple on the land (Ayodhya verdict: 6 things to know before the crucial ruling, 2019).

VHP organized various events mobilizing Hindus for the construction of a Ram temple at Ayodhya. In 1989, the last suit was filed on behalf of Lord Ram in which the law recognized both the idol and birthplace as juridical entities. Amidst all this, in 1990-91, Senior Bhartiya Janta Party (BJP) leader LK Advani began his rath yatra with kar sevaks for Ram temple. Then on December 6, 1992, kar sevaks demolished the mosque which is considered as one of the deadliest religious riots the country had seen leading to the killing of about 2,000 people (Ayodhya verdict: 6 things to know before the crucial ruling, 2019). The mosque’s demolition and the horrific violence it triggered across India polarized the society and politics along communal lines (Ramachandran, 2020).

It is observed that over time the Ayodhya case has been given more of a political flavor than a mere land dispute (Dayal & Garg, 2020). Babri mosque destruction was an event that shaped India in a different way. BJP leader, LK Advani faced the charges of criminal conspiracy for demolition of the mosque. BJP had a hope that this act would fortify Hindu votes in their favor, but the party was

unsuccessful in forming their government in Uttar Pradesh in the year 1993. However, in the year 1999, BJP formed a stable coalition under the leadership of Prime Minister Atal Behari Vajpayee. The Ram temple issue had created their Hindu vote bank enabling the BJP to implement their party's Hindutva agenda and revive the temple issue. (How the Babri mosque destruction shaped India, 2017). From winning just two seats in the 1984 general elections, BJP went on to head the coalition governments at the center in 1998, 1999, 2014 and 2019.

After the Babri Masjid demolition, this case was filed in Allahabad High Court. In September 2010, the court ruled that, the 2.77 acres of Ayodhya land be divided equally into three parts, with  $\frac{1}{3}$  going to each i.e., Ram Lalla represented by the Hindus, Sunni Waqf Board and Nirmohi Akhara. All the three parties appealed against the division of disputed land to the Supreme Court (Ayodhya Title Dispute, 2020). The Supreme Court of India from 6<sup>th</sup> August 2019 to 16<sup>th</sup> October 2019 held final hearing on the Ayodhya land dispute case. On November 9, 2019, the Supreme Court of India delivered the Judgment on the Ayodhya dispute matter. In one of the most important and anticipated judgements in India's history, a 5-judge bench headed by Chief Justice Ranjan Gogoi ordered that the disputed land at Ayodhya be used for the construction of a Ram Temple (Ayodhya verdict: 6 things to know before the crucial ruling 2019). The court further directed the government to allot a 5-acre plot at another prominent place to the Sunni Waqf Board for building a mosque.

The verdict was welcomed by the public and many political parties. Although BJP leadership was clearly happy with the decision, Muslim Sunni waqf board along with the Imam of Jama Masjid, Delhi had also accepted this decision with no further review of petition. On the other hand, All India Majlis-e- Ithedul Muslimeen, a prominent Party of South India highly criticized this verdict and felt that court's decision was under the pressure of the BJP government (Parvaiz, 2020). Indian National Congress party opposed this decision as the Party leadership felt that the decision might bring about disharmony and anger from the Muslim community. All India Muslim Law Board filed a review petition on 17th November 2019 against Ayodhya verdict as they were not satisfied with the alternative piece of land allocated for the construction of the Mosque (Petersen, 2019).

## 2.2 Review on Sentiment Analysis

Last decade has seen a phenomenal growth in the usage of micro blogging platforms, such as Twitter, Tumblr, Wix, Reddit, WordPress, Koo etc. Among different blogging platforms, Twitter has incited particularly far-reaching client appropriation and rapid development in terms of correspondence volume (Alsaeedi & Khan, 2019; Bhattacharya, 2021). According to a report by Statista research department (2021), India has third largest number of twitter users (22.1 million) in the world preceded by Japan (55.5 million) and USA (73 million). According to Hariharan (2021), Twitter's popularity measured as its monetizable Daily Active Usage (mDAU) in India grew by 74% for the year 2020. Twitter users vary from common man to celebrities, to CEO's of different companies, to politicians. Therefore, it is possible to collect opinions of people belonging to different ethnic, social, economic, geographical backgrounds.

Twitter data, however, does pose few challenges as well. Few researchers have shown concern regarding accuracy of twitter as a forecasting technique (Burnap et al., 2016; Sang and Bos, 2012). Bollen et al., (2011) suggested that although public mood can be predicted by Twitter feeds, but it doesn't offer any insight into the causative mechanisms. Further, there are challenges pertaining to the language used in tweets. While tweeting users can use anything from informal text to slangs, emojis, abbreviations, URLs etc., such data may present new and unique challenges for language processing (Rosenthal et al., 2014).

However, a number of recent studies have also indicated the efficacy and multi-faceted application of twitter in different areas of research. Few researchers (e.g., Mittal & Goel, 2012; Bollen et al., 2011) have attempted to predict the behavior of the stock market by measuring the mood of people on Twitter. Twitter data has been used in time series and sentiment analysis (Thelwall, 2014), responses to specific events, such as political elections (Bilal et al., 2019; Budiharto & Meiliana, 2018; Jaidka

et al., 2019), understanding sentiments about Brexit (Agarwal & Toshniwal, 2018), natural disasters (Hernandez-Suarez et al., 2019; Karami et al., 2020) and terrorism events (Najjar & Al-augby, 2021; Alsaedi et al., 2017), public sentiment related to movies and its positive impact in predicting box office revenues (Asur & Huberman, 2010; Bonta & Janardhan, 2019). Agarwal et al. (2011) stated that as twitter data is collected in a streaming fashion, it represents a true sample of actual tweets in terms of language use and content in comparison to other datasets. Pak & Paroubek (2010) posited that due to a constant growth in the audience of microblogging platforms and services, data from these sources can be used in opinion mining and sentiment analysis tasks.

Sentiment analysis is the process of assessing and analyzing the sentiments, views, feelings, reactions and thoughts of general public towards a particular topic. It is also known as opinion mining, natural language processing (NLP) or text mining as it concerns textual data processing and analysis. Medhat et al. (2014) asserted that its objective is to find the opinions of people and classify them into negative, positive or neutral sentiments. There are broadly two approaches for performing sentiment analysis viz machine learning technique and lexicon-based technique. Further, lexicon-based approach can be sub-divided into a dictionary-based approach and a corpus-based approach. Rajput and Solanki (2016) stated that in dictionary-based approach, dictionaries can be created manually or automatically by using seed words to expand the list of words whereas the Corpus-based approach focuses on finding opinion words with context specific orientations along with a seed list of opinion words to find other opinion words in a large corpus. Sentiment analysis using machine learning has been performed in varied fields such as marketing and segmentation (Go et al., 2009), classification of sentiments of movie reviews using SVM (Basari et al., 2012), identifying trends and patterns towards 2014 general elections (Almatrafi et al., 2015), stock market movements (Pavlou et al., 2016) and sentiments of public on GST reforms (Das and Koyla, 2017).

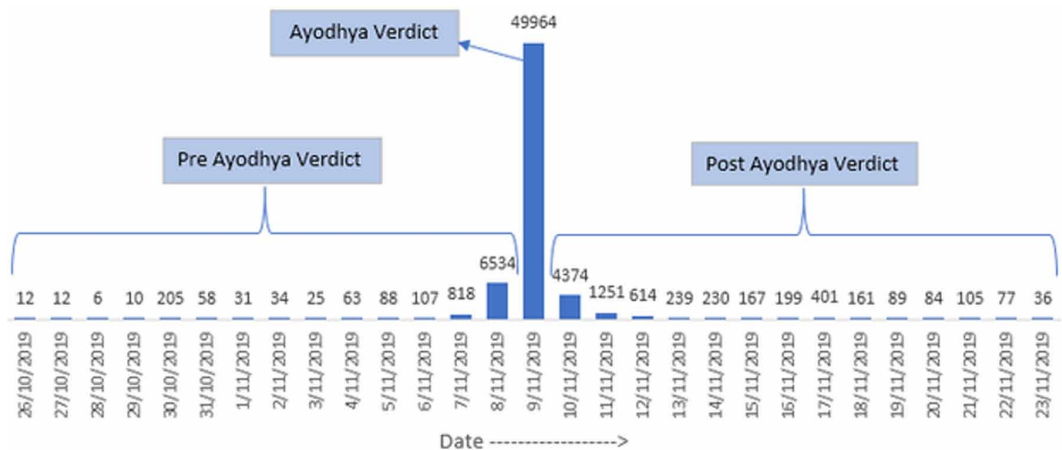
Researchers have taken the lexicon-based approach for performing sentiment analysis in varied contexts. For example, Mohammad (2013) introduced the concept of emotion word density and compared a collection of novels and fairy tales using the Google Books Corpus and emotion lexicon. Ortigosa et al. (2014) combined lexical-based and machine-learning techniques to model users' sentiment polarity according to the messages they write on Facebook. Agarwal and Toshniwal (2018) used the Lexicon based approach to establish correspondence between a cricket player's performance and fan's sentiments. Unniyal and Rai (2019) performed temporal and spatial analysis on tweets during post-GST implementation period using NRC emotion Lexicon and conclude that most tweets represent positivity and trust. Pandey et al. (2019) analyzed the feelings of people about Triple Talaq using two well-known API viz. TextBlob and SpaCy and concluded that SpaCy produces more accurate results. Chakraborty and Sharma (2019) used four different lexicon-based approaches: Bing, Afinn, NRC emotion lexicon, and CoreNLP to analyze the sentiments of people during the Phase 1 and Phase 2 of the odd-even policy implemented by the Delhi government to curb air pollution and show that NRC emotion lexicon outperforms all the others. Bose et al. (2020) used NRC emotion lexicon to study customer reviews and indicate that sentiment analysis can greatly increase consumer satisfaction. In the present study NRC emotion lexicon has been used to study the feelings and emotions of the people of India regarding the verdict of Supreme Court of India on Ayodhya land dispute case.

### 3. RESEARCH METHODOLOGY

Twitter is one of the most popular microblogging service used by people all over the world to express their views and opinions on any topic of interest (Alsaedi & Khan, 2019; Bhattacharya, 2021). Therefore, for the current study, twitter has been used to extract tweets related to Ayodhya verdict. It was on 9<sup>th</sup> Nov 2019, that the much-awaited verdict was announced by the apex court of India. The tweets pertaining to the Ayodhya verdict were collected using some popular and trending hashtags over a period of 29 days from 26<sup>th</sup> Oct 2019 to 23<sup>rd</sup> Nov 2019.

The dataset for the present study has been divided into three time periods i.e., before the verdict, on the day of the verdict and after the verdict. For pre Ayodhya verdict, 8003 tweets spanning over 2 weeks prior the verdict date have been taken. Then on the day of verdict i.e., 9<sup>th</sup> November 2019, 49964 tweets were taken. For post-verdict, 8027 tweets have been taken spanning over a period of 2 weeks after the verdict assuming that by this time people might have formed a more informed opinion on the topic. Figure 1 shows the day wise number of tweets collected. As can be seen from the figure, number of tweets on 26<sup>th</sup> October were only 12 and those on 23<sup>rd</sup> November had steadily declined to a mere 36, therefore, it wasn't deemed necessary to go beyond these dates. For the present study, lexicon-based sentiment analysis approach has been used as this approach provides wider term coverage, is easily understandable, is domain independent, and also it can be easily extended and improved (Bonta & Janardhan, 2019).

Figure 1. Daily count of tweets collected



### 3.1 Data Pre-Processing

The extracted data was then pre-processed to make it capable of being analyzed and mined. This is a critical step which enables separation of noise from data and impacts the validity and reliability of the results. Each tweet is passed through a python program that performs the preprocessing that includes 1) removing URL's, twitter links, usernames and hashtags, 2) removing special, recurring and non-English characters, 3) removal of abbreviations and acronyms of common terms, 4) removing numbers and symbols, 5) removing all stop words like is, am, the, an etc., 6) trimming and removing all blank tweets, 7) removal of the retweets.

Table 1 shows the above discussed steps by taking two original tweets and pre-processing them. In the next step tokenization is done to divide the corpus into smaller parts called tokens by using word\_tokenize() method of the NLTK (natural language tool kit) module in python. Next lemmatization, which focuses on the morphological structure of a word and converts a word into its base form without changing its meaning is performed. As a result, we have a cleaner dataset, which is more likely to carry relevant sentiments and emotions.

### 3.2 Sentiment Analysis of Tweets

After pre-processing, the tweets now have words which convey some sentiment and unnecessary words such as stop words, numbers, special characters etc. have been removed. For extracting

Table 1. Pre-processing of sample tweets

|   |   |
|---|---|
| <p># BreakingNews Decades-long wait to settle historic # Ayodhya dispute ends today. Hindus get disputed land of 2.77 acre for # RamMandir, Muslims will be given an alternate 5 acre land for Mosque.#India#SupremeCourt#AyodhyaVerdict#MandirInAyodhya #RamJanmabhoomipic.twitter.com/OTvsQO3f6</p> <p><b>Removing # tags</b><br/>         # BreakingNews Decades-long wait to settle historic dispute ends today. Hindus get disputed land of 2.77 acre for, Muslims will be given an alternate 5 acre land for their..twitter.com/OTvsQO3f6D'</p> <p><b>Removing Twitter links and Non-English characters</b><br/>         BreakingNews Decadeslong wait to settle historic dispute ends today Hindus get disputed land of 277 acre for Muslims will be given an alternate 5 acre land for</p> <p><b>Removing numbers</b><br/>         ' BreakingNews Decadeslong wait to settle historic dispute ends today Hindus get disputed land of acre for Muslims will be given an alternate acre land for '</p> <p><b>Lemmatization and removing stopwords</b></p> | <p>@ MumbaiPolice spend half of their careers looking suspiciously at people walking strangely. That's what this city has made them experience, 'Something can go wrong after any heavy debate' 40000 Cops deployed. # AYODHYAVERDICT</p> <p><b>Removing # tags</b><br/>         @ MumbaiPolice spend half of their careers looking suspiciously at people walking strangely. That's what this city has made them experience, 'Something can go wrong after any heavy debate' 40000 Cops deployed.</p> <p><b>Removing Non-English characters and numbers</b><br/>         MumbaiPolice spend half of their careers looking suspiciously at people walking strangely That's what this city has made them experience 'Something can go wrong after any heavy debate' Cops deployed</p> <p><b>Lemmatization and removing stopwords</b></p> |
|---|---|

sentiments of public regarding the Ayodhya verdict, NRC Emotion Lexicon (2013) and Word list (2018) containing around 14,182 words mapped with either of eight emotions viz. (anger, fear, trust, anticipation, surprise, sadness, joy & disgust) has been used. Next, to extract positive, negative, and neutral tweets a lexicon and rule-based sentiment analysis tool VADER (Valence Aware Dictionary and Sentiment Reasoner) is used. VADER is a valence-based, human-curated gold standard lexicon that does not require any training data (Bonta & Janardhan, 2019). It has been quite successful in assessing social media texts, reviews and general sentiments. VADER not only shows positive or negative scores but also informs about the extent of positivity or negativity in a sentiment. It is fast enough to be used online, can be easily extended and doesn't suffer badly from speed-performance aspects (Bonta & Janardhan, 2019).

In the present study we have performed sentiment analysis in three phases based on time i.e., pre-verdict, on the date of verdict and post-verdict on 8003, 49964 and 8027 tweets respectively. Firstly, each word of the pre-processed tweet is associated with an emotion corresponding to the NRC emotion lexicon. Some words which are observed as being associated with multiple emotions are assigned to each such emotion. Next, total score of emotion for each tweet is calculated. In the next step, bar-graph for each emotion is plotted for each of the three sets of tweets. Word cloud figuring the most prominently used words in each set of tweets is also made. Positive and negative tweets are extracted using VADER. Finally, bar-graph of positive and negative sentiments is plotted.

## 4. RESULTS

The results of analysis of twitter data are presented in this section. The data was divided into three phases namely tweets before the verdict, tweets on the day of the verdict and tweets after the verdict. In this section results have been presented in a similar manner for the purpose of understanding the varying emotions of public at large.

### 4.1 Pre-Ayodhya Verdict

There are 8003 tweets related to Ayodhya verdict collected over a period of 14 days from 26<sup>th</sup> Oct 2019 to a day prior to the verdict i.e., 8<sup>th</sup> Nov 2019. The graph shown in figure 2 is obtained by adding emotions extracted from individual tweets. Each of the eight emotions were closely monitored over the period of 2 weeks and it can be observed from figure II that the emotions of anger (0.03), sadness (0.02) and disgust (0.015) are lower in comparison to joy (0.086) and surprise (0.039). Level

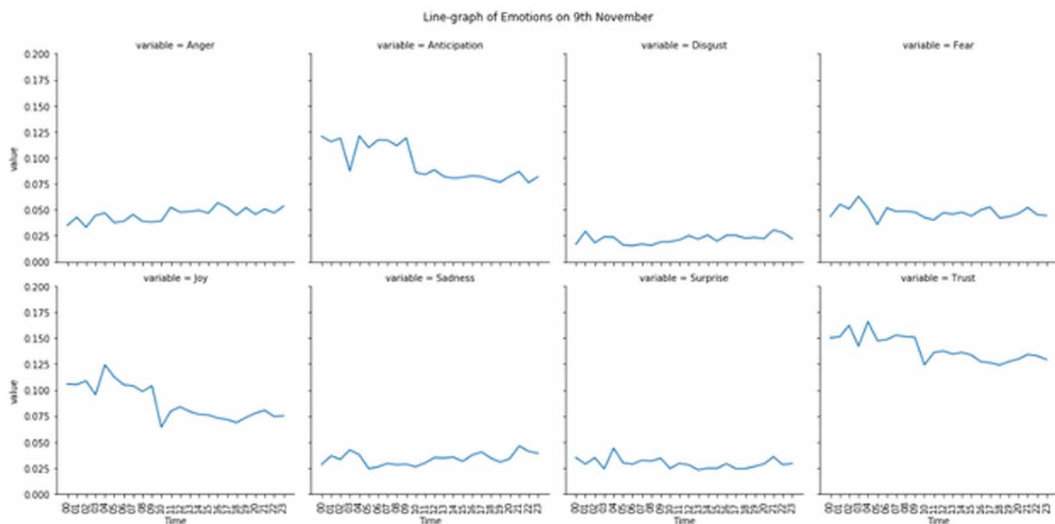


Word cloud of prominent words in Pre-Ayodhya tweets such as “maintain peace”, “hope”, “respect”, “harmony”, “accept” shown in figure III clearly shows a positive sentiment. Words like “justice”, “hope” and “judgement” indicate that general public wants peace whatever is the result. “Big” and “judgement” are also two frequent words used in tweets as this was a long-due judgement which would resolve the two-decade old land dispute for once and all.

#### 4.2 Results-- 9<sup>th</sup> November Analysis

This is the day the Supreme Court gave the verdict on Ayodhya land dispute. On this day there were 49964 tweets related to the verdict which have been analyzed on an hourly basis as shown in Figure IV. From graph it is evident that the level of anticipation which started at a very high level reached a very low level around 11:00 am which was the time the Supreme Court verdict was pronounced after which it remained at a very low level. The emotions of anger, sadness and disgust although did show a mild increase but were significantly lower than joy and trust. The surprise emotion was stagnant throughout the day which shows that people were not surprised by the verdict of Supreme Court and majority of the people had accepted the verdict. The same can be inferred from the bar graph of emotions of the entire day as shown in figure V.

Figure 4. Hourly line graph of emotions on the day of verdict



The word cloud in figure VI below also supports the above sentiments. It can be observed that words like “happy”, “respect”, “well”, “decision”, “peace”, “harmony” and “justice” indicate positive emotions. People are happy with the verdict and are appealing to others to maintain peace. People do not want the same blood bath which happened two-decades ago. They want to live in peace and harmony.

#### 4.3 Post- Verdict Analysis

For post-verdict analysis there are 8027 tweets related to Ayodhya verdict collected over a period of two weeks from 10<sup>th</sup> Nov 2019 – 23<sup>rd</sup> Nov 2019 as is also visible in in figure I. For analyzing tweets in this section, same methodology has been followed. The bar graph shown in figure VII shows that all negative emotions show a visible decline in comparison to those in figure V. The emotions of





“anticipation” and “surprise” show a sharp decline as the judgement has been declared. However, the emotion of “trust” is still the strongest.

Figure 7. Bar graph of emotions

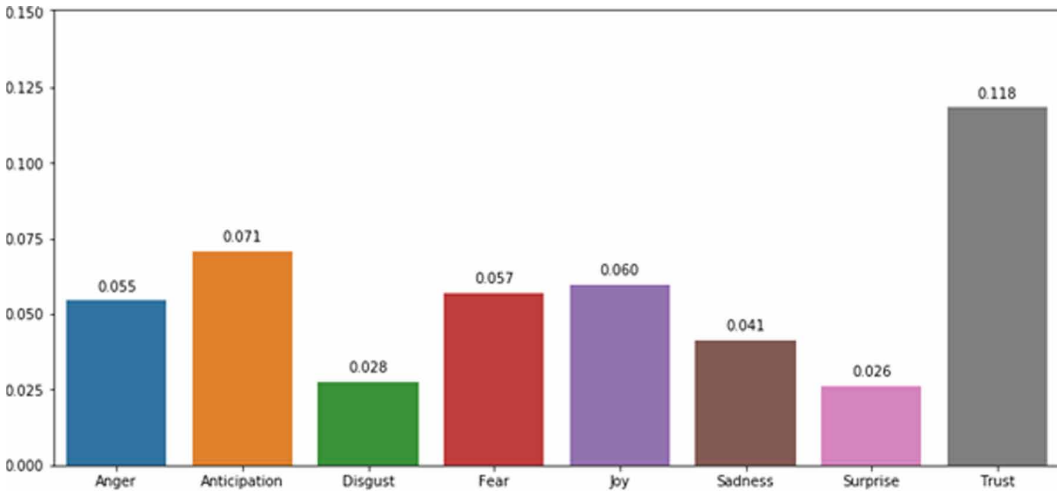


Figure 8. Word cloud of prominent words in tweets



The same can be observed in figure VII, which when compared with figure III and figure V show a substantial decline in all 8 emotions. However, the word cloud in figure VIII gives a clearer picture of what people are discussing. Figure 8 shows that words like “review petition” shows that

some people were not happy with verdict and demanding for review. Whereas, words like “accept”, “respect”, “good”, “happy”, “well”, “peace” shows that majority of people accepted the verdict.

#### 4.4 Comparative Analysis of the Three Phases of Verdict

Table 2 presents a comparative analysis of tweets during three phases of the verdict. Since, each of the phases namely pre, on and post had a different number of tweets i.e. 8003, 49964 and 8027 respectively, the scores of sentiments would be different in each case. So, to compare them, the scores have been normalized. This has been done by dividing the total score with the number of tweets and after normalization all the scores are in range of 0 to 1. Scores for each emotion have been obtained after adding the scores for total tweets per day. In case of line graphs for pre and post phases, normalization is done by dividing the scores with the total number of tweets per day. For 9th November emotion line graph, normalization is done by dividing the scores with number of tweets per hour. The above analysis can be substantiated with the observations from table II. It can be observed that the emotions of anticipation, joy and trust dominate all the three phases. It may further be observed that over time there is a significant decline in the negative emotions. The emotion of anger has reduced from 10.06% in pre-verdict phase to 8.26% in the post-verdict phase, fear has also reduced from 11.5% to 9.19% and the emotion of disgust also shows a reduction from 6.14% to 4.13% and the weightage of these three emotions is the least in the post-verdict phase. It can also be deduced from table 2 that the weightage of positive emotion of joy shows a significant increase from 12.16% to 18.95% and trust shows a substantial increase from 24% to almost 30% in the post-verdict phase. The emotion of surprise shows a steady decline from the pre-verdict phase (7.14%) to post-verdict phase (5.7%). The simultaneous increase in positive emotions and decrease in negative emotions from pre-verdict phase to post-verdict phase indicate strongly that the public at large has accepted the verdict with a lot of positivity and has shown a lot of confidence in the verdict of The Supreme Court of India.

Table 2. Snapshot view of change in emotions of pre, on and post-verdict tweets

| Emotions     | Pre-Verdict | Weightage (%) | 9 <sup>th</sup> Nov | Weightage (%) | Post-Verdict | Weightage (%) |
|--------------|-------------|---------------|---------------------|---------------|--------------|---------------|
| Anger        | 0.059       | 10.06         | 0.047               | 9.81          | 0.04         | 8.26          |
| Anticipation | 0.094       | 19.92         | 0.089               | 18.58         | 0.08         | 17.57         |
| Disgust      | 0.028       | 6.14          | 0.022               | 4.59          | 0.018        | 4.13          |
| Fear         | 0.053       | 11.5          | 0.044               | 9.19          | 0.044        | 9.19          |
| Joy          | 0.059       | 12.16         | 0.081               | 16.91         | 0.09         | 18.95         |
| Sadness      | 0.041       | 8.99          | 0.032               | 6.68          | 0.03         | 6.34          |
| Surprise     | 0.035       | 7.14          | 0.028               | 5.85          | 0.026        | 5.7           |
| Trust        | 0.112       | 24.09         | 0.136               | 28.39         | 0.141        | 29.86         |
| Total Score  | 0.481       |               | 0.479               |               | 0.469        |               |

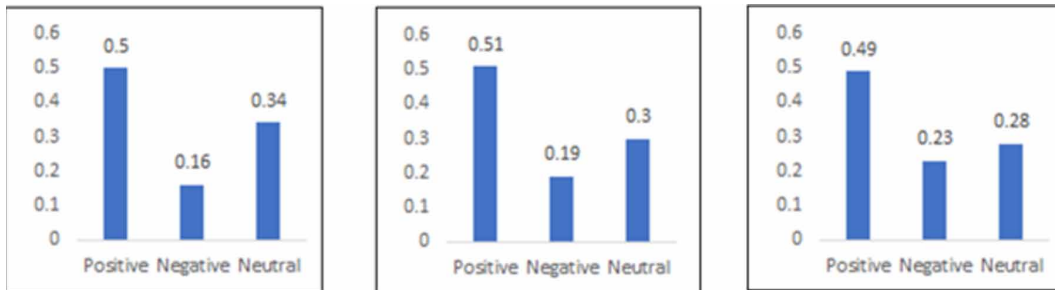
#### 4.5 Sentiment Classification Using VADER

It is a lexicon and rule-based sentiment analyzer, is used to extract positive and negative sentiments expressed on social media according to their semantic orientation. VADER not only talks about the positivity and negativity score but also tells us about how positive or negative a sentiment is. It classifies positive and negative sentiment using the following rule: if compound score of a sentiment is greater than 0.05 then it is positive; if it is between -0.05 and 0.05 then it is neutral and if the compound score is less than -0.05 then it is a negative sentiment.

A total of 65,994 tweets were collected in three phases from which positive and negative tweets have been extracted using VADER. Figure IX depicts the bar-graph of positive and negative sentiments and shows that in all the three phases positive sentiments are much higher than negative and neutral sentiments also while positive sentiment is almost same there is a substantial decrease in the negative sentiment also the number of neutral tweets has increased. This corroborates with

the results using the NRC emotion lexicon which also depicted increase in positive sentiment and decrease in negative sentiment.

Figure 9. Graph for positive and negative tweets through VADER



## 5. DISCUSSION

This paper recognizes the use and impact of social media (Twitter in particular) in gauging public perceptions of general public by analyzing the users' feelings expressed in the form of tweets or free text. The study was a temporal research undertaken with the objective of understanding the sentiments of people residing in different parts of the world as expressed by them on Twitter. Further, the data was not collected at a particular point in time but was collected over a period of four weeks and divided into three phases i.e., pre-verdict, on the date of verdict and post-verdict to capture the changes in different emotions over time. As the Ayodhya verdict was one of the most awaited judgements in Indian history, it was conceived that the emotions might change as the judgement day approaches and till the news of the judgement settles. This was an important aspect to be considered as it is quite possible that initial sentiments regarding a particular event may change after greater understanding of the event's implications.

The results indicated a decline in the negative emotions of anger, fear, and disgust over time with their presence being least significant in the post-verdict phase. Positive emotions of trust and joy showed a substantial increase from pre-verdict to post-verdict phase. The emotions of surprise and anticipation display a steady decline after the announcement of the verdict. Overall, the analysis of tweets shows that the verdict of The Supreme Court of India has been taken in a positive stride by the public at large. In a content analysis of 213 news pieces related to Ayodhya Verdict published in top 3 Indian English newspapers, Dayal & Garg (2020) highlighted the intertwined relationship of religious issues and politics, and how political parties use the common man as weapon to divide communities for their own benefits. They further assert that while almost everybody has welcomed the Supreme Court's decision, some communities are not happy with it. Sharma (2019) concur with the above and state that there has been an overall sentiment of acceptance and harmony but also posit that the court has prioritized the religious beliefs of one community over legal rights of the other. However, Ramachandran (2020) in her study has explored anti-Muslim violence in India since 2014 and the implications of Hindutva violence for India and asserted that the verdict legitimized the unlawful destruction of the Babri mosque and handed a major victory to Hindutva groups in a case where their legal claim was weak. While this research study revealed positive sentiments regarding the Ayodhya verdict of The Supreme Court of India, it is quite plausible that such controversial and long-standing conflicts need to be examined longitudinally to reach to definite conclusions regarding the attached public sentiments.

Sentiment analysis has been utilized by several researchers towards decoding the public perceptions towards various social, cultural, and economic events. This is because it provides a deeper view of the relationship between the events as reported in electronic or print media and subsequently the sentiments garnered on social media. Du et al. (2017) in their research demonstrated a direct relationship between a positive news media publication and related social media sentiment. It is possible that positive social media sentiments may have the ability to bring about a positive real-world behavior. This has been categorically proven in different studies in fields like movie reviews, elections, stock market etc (Bonta & Janardhan, 2019; Jaidka et al., 2019; Mittal & Goel, 2012). Therefore, this indicates the potential use of social media in almost any domain viz. product review, ad campaigns, stock market, and public health etc. Furthermore, Twitter data is an outcome of debates, discussions, and diverse opinions, and is now becoming the go to source of news for public at large rather than the conventional sources such as the print and electronic media. Sentiment analysis of data via microblogging sites seems to be a promising research avenue as it may help to promote a variety of initiatives across fields. The present study reaffirms that positive sentiments are likely to translate into positive behavior. Results of the temporal data show that the general Indian public is well-poised to accept the verdict leading to peace and harmony.

While data for most of the research on sentiment analysis originates from twitter, there was no consistency observed in the techniques used to perform sentiment analysis. Hence it can be understood that there was no single “gold standard” approach used by researchers to conduct sentiment analysis as each method had its own set of advantages and disadvantages (Alsaedi & Khan, 2019; Bonta & Janardhan, 2019; Devika et al., 2016; Najjar & Al-augby, 2021). This shows that there is still a lot of scope and exploration that can be done in the area of sentiment analysis in order to establish a standard. It was also observed that Lexicon-based approaches were preferred to Machine Learning approaches especially in cases when reactions were needed to be sought on occurrence of certain events.

## 6. LIMITATIONS AND FUTURE SCOPE

Although the study fulfilled the objective of understanding the general public’s opinion on the verdict regarding the Ayodhya case, this study is not without limitations. The study is based on tweets of users which are generally in English language and therefore might not be representative of the population that doesn’t understand English. Therefore, present research doesn’t factor in location and language of users, future analysis can take into account these factors to avoid geographical and cultural sampling errors. Future researchers may also use platforms like Koo which offer local languages to users to write in. Also, data for the present research was collected only via twitter, future researchers may want to collect data from multiple such platforms to provide more generalization of the results. Further, as we know users can use anything from informal text to slangs, emojis, abbreviations, URLs etc., such data may present new and unique challenges for language processing. Such emoticons can be highly subjective and often context dependent. Another limitation of lexicon-based approaches is that they have the capability of including a finite number of words in the lexicons and assign fixed sentiment orientation and score to words. In future researchers may base their findings on more than one approach to obtain better results. Lastly, the data extracted from Twitter was very raw and hence was duly pre-processed and cleaned, but may still have some inconsistencies, hence it is suggested to future researchers to move with caution and prudence in data cleaning as free text can be noisy and dirty.

## 7. CONCLUSION

In the last decade social media has increasingly influenced both societies and individuals. Data from websites such as WordPress, MouthShut.com, Tumblr and Twitter have played an important role in gathering the sentiments and feelings of people pertaining to specific topics. In this paper we have analyzed the public sentiment on the verdict of Supreme Court of India regarding the Ayodhya land

dispute case. The sentiment analysis has been conducted in three phases to understand the change in sentiments over time. The three phases have been divided on the basis of time into pre-verdict, on the day of verdict and post-verdict phase. Sentiment analysis on each phase using NRC emotion lexicon and VADER reveals that the verdict has been happily accepted by the general public. Analysis of different emotions also shows that the positive emotions of joy and trust significantly dominate the other emotions. Prominent words such as “peace”, “hope”, “respect”, “harmony”, “accept”, “justice” and “happy” in word clouds of each phase also confirm the analysis. Sentiment classification using VADER also shows the dominance of positive tweets over negative tweets. These keywords represent how the judgement was welcomed with the appeal of peace and harmony. But with the acceptance, there appears to be some unhappiness for the verdict as well. It also appears that some Muslim members want to file a review petition, while Hindus were very happy with the decision. Looking at the socio-political landscape of India it may also be understood that the issue is not only people centric but political as well, these parties may use any communal, religious or social issue as a weapon for their benefit. We may see an increased utilization of techniques such as sentiment analysis via Twitter and other microblogging sites for analysis of political, social, economic events garnering public attention in the future. High influx of digital content

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