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Location-based Sentiment Analysis of Indian Political Campaign on Twitter

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***Abstract*—** Twitter is a widespread micro-blogging, social media platform used for political campaigning, and in India, it is among the largest online platforms used for sharing political information. During the Indian General Election 2019, all political parties used social media to a great extent wherein political campaign MainBhiChowkidar (I am also Watchman) was the most popular campaign by the country's leading political party, Bhartiya Janata Party (BJP). This study aimed to explore the location-based sentiments for the tweets shared by citizens in response to this political campaign 'MainBhiChowkidar'. In total 38,227 tweets from April 1, 2019, till May 19, 2019, that mentioned about campaign 'MainBhiChowkidar' were analyzed. Location-based sentiment analysis using Python was carried out to identify the emotions conveyed by these tweets. The results reveal that campaign has reached 74 countries along with India. In India, positive sentiments among the users were found for this campaign in most of the states. The outcomes of this research will contribute to examining public opinion using location-based sentiment analysis to get the results with higher accuracy.

Keywords— Content Analysis, Political Campaign, Twitter, Sentiment Analysis, India General Election 2019

I. INTRODUCTION

Social media is a part of non-mass media where citizens often generate content by participating. Although using an integration of technology with elections may have a different motive, authors posit that social media fosters online political engagement by bridging the gap between politics and citizens through interactivity and personalization. Therefore, political parties have started framing online communication strategies, unlike traditional media either to disseminate a message or to influence the general public. Initially, in 2008 and 2012, Barak Obama laid a successful online campaign for mobilizing voters and for raising funds. Thereafter, online campaigning has gained popularity among politicians and political parties around the globe. Wherein Facebook, Twitter, and YouTube are among the most used social media platforms for political purpose in the last ten years and has become an essential tool for political campaigning.

The present study has considered Twitter for analysis as it is a widespread micro-blogging social media platform used for political campaigning it provides and in India, it is one of the biggest online platforms used for sharing political information, establishing a connection or expressing preference or contradiction towards parties or candidates. Secondly, the data is easily accessible using API from Twitter on various parameters, whereas, Facebook has made some restrictions after the Cambridge Analytica case. Moreover, researchers, journalists, political parties and citizens consider Twitter as an indicator of political trends.

In India, Twitter was used to a great extent by Indian politicians during the 2014 electoral campaigns. During the Indian General Election 2019, all political parties used social media to a great extent wherein political campaign MainBhiChowkidar (I am also Watchman) was the most popular campaign by the country's leading political party, Bharatiya Janata Party (BJP) to counter corruption charges. The Twitter campaign #MainBhiChowkidar has received approximately 1.5 million mentions. In contrast, the tweet posted by prime minister Narendra Modi, which had the hashtag #MainBhiChowkidar received about 55,000 retweets and more than 1,50,000 likes, which was considered a highly engaged tweet. Later on, the general public started using "MainBhiChowkidar", and it is required to explore content shared by the public in response to this campaign to have better insights into online participation, which results in the success of the campaign at different locations. Therefore,

this study aimed to address the following questions:

i. Which segment of the public has shown major participation in the Campaign?
ii. What were the common topics and issues mentioned by the public in response to the political campaign MainBhiChowkidar'?
iii. In which locations, the Campaign was most popular or active?
iv. What were the sentiments possessed by the public on different locations using subjectivity and polarity analysis?

II. REVIEW OF LITERATURE

Keeping in mind Twitter's interactive function, researchers around the globe tried to analyze the user behavior pattern by focusing on social media analytics. Social media analytics is concerned with developing and evaluating informatics tools and frameworks to collect, monitor, analyze, summarize, and visualize social media data, usually driven by specific requirements from a target application. In the present study, data were extracted using a web-based application from Twitter concerning the pre-poll campaign MainBhiChowkidar (I am Watchman) and further analyzed using Python and visualized using Tableau.

Numerous authors examined Twitter usage for political parties, candidates and campaigns because their profiles are public and easily accessible for research whereas limited studies reviewed the general public on the same platform. Also, citizens are more likely to tweet who have an interest in specific domains like celebrities or politics, political followers, or who have shown political participation such as casting a vote. Apart from individuals associated with political parties or leaders, the general public such as journalists, educators, bloggers, professionals etc. has also shown online participation. The study tries to identify who is more likely to participate in an online political campaign using biography written on their Twitter accounts (RQ1).

Another striking element of campaigning is the content, topic or issues people discuss choosing a particular talk topic is a crucial decision for political actors, and the right topic attracts more engagement from the people. The public like to share content that contains humor related to political issues, party or leader and are negative. Therefore, the present study is intended to identify the most used topics in the campaign (RQ2). However, this content is useful for exploring the opinion or emotions of the public. Therefore, media content tracking and opinion mining are found to have significant importance to their various advantages. On large-scale analysis, online data for measuring opinions is less expensive, quicker and real-time monitoring of public opinion. To analyze extensive data of varied social media users and understand the opinions of the public, an advanced analysis technique is required to extract, sort and analyze the data which can be accomplished by sentiment analysis.

Sentiment analysis or opinion mining is the automatic classification of text corpus into various emotions viz Positive, neutral or negative. In other words, sentiment analysis determines what and in what context, people think on a specific topic or issue using an advanced technique. Presently, we have adopted the subjectivity and polarity analysis to get the voters' opinions and emotions on the "MainBhiChowkidar" campaign. Subjectivity refers to the use of nouns and adjectives in text, which is further classified into subjective opinions or objective facts. This reflects the relationship of context with an opinion, and the values range from 0 to 1 wherein, 0 stands for highly objective, and one represents highly subjective and 0. Whereas Polarity analysis quantifies the text into positive or negative opinions concerning the particular topic of discussion and the value of polarity ranges from negative 1 to positive 1.

Many studies have examined sentiment analysis in electoral studies, but we try to explore the reach of the campaign (RQ3) along with the subjective and polarity analysis based on the location of tweets to get more accurate outcomes (RQ4). The findings will contribute to the importance of location variables in getting opinions using subjective and polarity analysis.

III. RESEARCH METHODOLOGY

An exploratory and descriptive research design was used. The research methodology consists of two phases, accessing Twitter data and sentiment analysis. Moreover, the most often used approach for sentiment analysis is to analyze the text by considering the group of individual words, then combine the individual sentiments for the text as a whole. Therefore, this study has used lexicon-based sentiment analysis using Python TextBlob for Natural Language Processing.

The procedure of sentiment analysis includes real-time data extraction, sentiment classification and analysis. The data set of extracted tweets is then passed to the text pre-processing stage, and finally, classification of text into subjectivity and polarity analysis as a part of sentiment analysis.

The streaming application programming interface (API) is used to gather real-time Twitter data by employing specific keywords "Chowkidar" and "MainBhiChowkidar" to collect relevant data. As we have employed keywords, which include novice users. However, collecting data from hashtags may not provide inclusive results as only experienced users may be known to a specific hashtag. In total 38,227 tweets over 50 days from April 1, 2019, till May 19, 2019, that had the mention about campaign 'MainBhiChowkidar' were collected using the Twitter streaming API and are then saved in CSV format for further cleaning.

Before final analysis, the data has passed through the cleaning process, which removed all the unnecessary data such as URLs, @ users, numbers, punctuations, stop words, white spaces etc. to get more accurate and relevant results from the dataset. Out of the total, in 8,270 tweets, the location information was unclear so the dataset now contains 29,957 tweets including 2810, international tweets. Hence, the refined tweets are then used for final analysis using Python "TextBlob" for Natural Language Processing (NLP).

IV. DATA ANALYSIS AND INTERPRETATION

A. User's participation in the campaign

The data were analyzed to explore the kind of people who participated in the pre-poll campaign wherein results found nine categories of individuals who have shown major participation namely, Party Workers or Volunteers who have mentioned themselves as party worker or given any indication of being party association as fan or volunteer; Professionals like Doctors, Accountants, Advocates, Surgeon etc.; Artists such as travelers, artists, cartoonists, poet, photographer etc.; Educators such as Lecturer, Teacher and Trainer etc.; Journalists like news reporters and media; Politicians who have specifically mentioned political leader or politician; Businessman and entrepreneurs; Bloggers such as developer, analyst, hacker, YouTuber; others like a farmer, retired, philosopher, consultant etc.

As stated in Table 1, major participation in the pre-poll campaign was observed by people who are associated with any of the parties either favoring or anti-party in the form of supporters, volunteers, fans, workers, and admirers (37.56 percent) followed by professionals (25.89 percent). Further, people belong to artists (16.60 percent), and the educational sector (16. 37 percent), journalists (11.89 percent) have shown sufficient online participation in Twitter pre-poll campaigns whereas 2.07 percenthave described themselves as Chowkidar (Watchman) in their bio description.

TABLE I. USER CATEGORY

User Category	**Percentage**
Party Workers or Volunteers	37.56
Professional	25.89
Artists	16.60
Educators	16.37
Journalists	11.89
Politicians	9.46
Others	7.62
Entrepreneurs	5.34
Bloggers	4.76

Source: From data extracted

B. Frequent Topics used in the Campaign

In this section, we tried to explore the common topics or words used in the campaign. Figure 1 illustrates the frequently used topics in the campaign by the twitterers wherein, words like "Chowkidar", "Modi", "Chor", "India", "Rahul Gandhi", "Congress", "namo" were majorly used either in or outside India. However, we found three major classifications of words namely, Call to vote in Election, Support or Against a Political Leader and Party, and Addressing Social and National Issues. Call to action in elections includes words like "Vote", "Lok Sabha Elections", "Ekbarphirmodi" (once again Modi), "Elections 2019", "bharatbolemodimodi" (India speaks Modi Modi). Similarly, support or against a political leader or party represented by words like"Narendra Modi", "Rahul Gandhi", "Honest PM", "Watchman", "BJP", "Congress hates Chaiwala" (Congress hates Tea Vendor), "Congress", "Chowkidar Chor" (Watchman is a thief), "want Chowkidar", "Modi chowkidar", "Support Chowkidar". Lastly, words like "Terrorism", "Transforming nation", "Clean India", "National Development", "Poverty", and "Corruption Free Nation" target social and national issues.

C. Frequent Topics used in the Campaign

The campaign "MainBhiChowkidar" led by Prime Minister Narendra Modi is observed to be the most popular campaign worldwide, as the dataset revealed its reach in 74 countries other than India. Wherein top 5 contributor countries in this dataset are Pakistan (India's neighbor and born out of the partition of India), the USA (39,20,000), UAE (38,60,000), UK (10,51,000) andCanada (14,30,000) which correspond to large Indian diaspora living in these countries. Brackets show the diaspora size in these countries.

The target respondents of every election campaign are the voters of the country and27147 tweets were considered after the cleaning process and having location information from India. The location information mentioned India with no referenceto states and cities in 5762 tweets. Among 28 states of India (as of 2019), the people have shown participation from the majority of Indian states except for Mizoram, wherein no tweet was observed. Likewise, out of the seven union territories of India (as of 2019), no tweets from Dadar & Nagar Haveli and Lakshadweep were found.

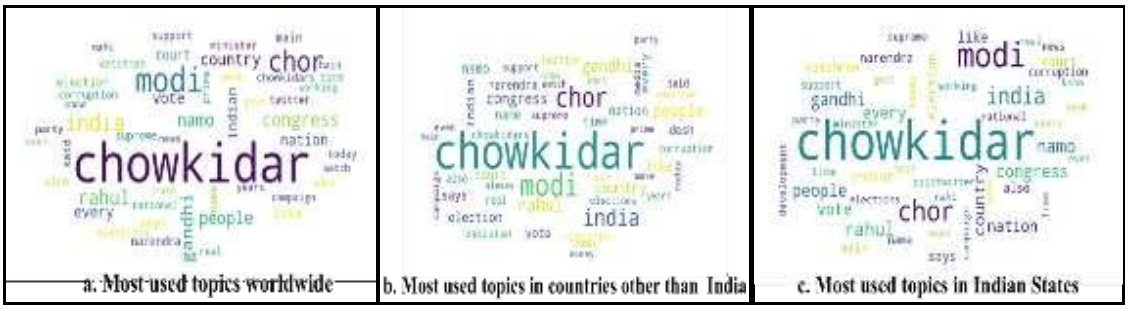

Fig. 1. Visualization of frequent topics used in the Campaign

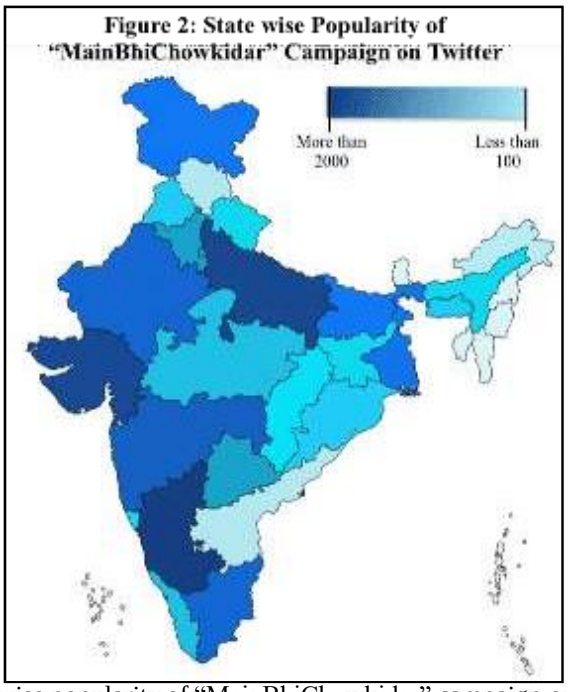

Fig. 2. State-wise popularity of "MainBhiChowkidar" campaign on Twitter

On analyzing state-wise, data revealed that the campaign had the highest popularity in Karnataka and Uttar Pradesh having more than 2000 tweets count as shown in figure 2. Also, Gujarat, Maharashtra, Tamil Nadu, Rajasthan, West Bengal, Bihar, and Jammu Kashmir with having tweet counts between 1000 to 1999. However, a smaller number of tweets were located from Pondicherry, Tripura, Arunachal Pradesh, Manipur, Nagaland, Meghalaya, Daman and Diu, Andaman and Nicobar, and Sikkim.

D. Location-Based Sentiment Analysis of Campaign

On running sentiment analysis, the result shows the total sentiments score of the cleaned original dataset as 1576.95with an average score of 0.041, which means the people around the globe have a favorable opinion about the campaign. Overall, positive sentiments are noticed in the majority of countries except for a few like Estonia, Israel, Kenya, Kosovo, Ukraine, and Taiwan etc. where popularity is least (1-5 tweets).

TABLE II. LOCATION-BASED SENTIMENT ANALYSIS WORLDWIDE

Country	Tweet Count	Total Sentiment	Average Sentiment
Afghanistan	3	0.17	0.06
Algeria	2	0.16	0.08
Antigua Barbuda	3	0.26	0.09
Argentina	2	0.79	0.4
Australia	52	4.46	0.09
Bahrain	19	0.83	0.04
Bangladesh	48	1.5	0.03
Belgium	6	0.11	0.02

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Brazil	4	0.01	0
Canada	145	6.84	0.05
China	28	0.43	0.02
Costa Rica	6	0.26	0.04
Croatia	1	0	0
Cyprus	4	0.08	0.02
Czech Republic	4	0.42	0.1
Egypt	2	0.11	0.05
Estonia	2	-0.02	-0.01
Finland	2	0.5	0.25
France	31	1.35	0.04
Germany	37	1.81	0.05
Ghana	3	0	0
Greece	3	-0.01	0
Hungary	1	0	0
Iceland	1	0	0
Indonesia	14	0.78	0.06
Iran	4	0.91	0.23
Iraq	1	0.2	0.2
Ireland	5	0.47	0.09
Israel	4	-0.16	-0.04
Italy	7	0.05	0.01
Japan	13	-0.27	-0.02
Jordan	2	0	0
Kenya	3	-0.45	-0.15
Kosovo	1	-0.28	-0.28
Kuwait	25	0.41	0.02
Lebanon	2	0	0
Liberia	1	0.29	0.29
Malaysia	12	1.06	0.09
Mauritius	2	0.56	0.28
Mexico	1	0	0
Nepal	23	2.74	0.12
Netherlands	3	-0.16	-0.05
New Zealand	8	0.25	0.03
Nigeria	12	1.32	0.11
Norway	3	0.07	0.02
Oman	9	0.14	0.02
Pakistan	721	27.31	0.04
Portugal	3	0.01	0
Qatar	99	2.96	0.03
Romania	2	0.2	0.1
Russia	2	0	0
Rwanda	3	0.04	0.01

Saudi Arabia	82	0.17	0
Senegal	4	0.3	0.07
Serbia	1	0	0
Singapore	79	8.46	0.11
Slovakia	1	-0.03	-0.03
South Korea	52	1.36	0.03
Spain	9	0.16	0.02
Sri Lanka	12	0.21	0.02
Sweden	27	0.22	0.01
Switzerland	7	0	0
Syria	1	0.2	0.2
Taiwan	3	-0.94	-0.31
Tanzania	4	-0.06	-0.02
Thailand	13	1.33	0.1
Turkey	3	0.46	0.15
UAE	286	14.19	0.05
UK	248	7.32	0.03
Ukraine	5	-0.89	-0.18
USA	569	13.08	0.02
Venezuela	2	0.15	0.08
Vietnam	4	-0.11	-0.03
Yemen	4	0.47	0.12
Total Sentiment Score=1576.95, Average Sentiment Score= 0.04, Total tweets worldwide =38227			

In India, the total sentiment score is observed as 183.96, with an average score of 0.031, which depicts that Indian citizen possess favorable opinions and sentiments towards the campaign. In Uttar Pradesh and Gujarat, higher positive participation was found (See Table 3) followed by Karnataka, Maharashtra, Rajasthan, and Bihar. Nevertheless, the people of Manipur reflect negative sentiments towards the campaign (Average Sentiment Score = -0.03).

TABLE III. LOCATION-BASED SENTIMENT ANALYSIS IN INDIA

State/ Union Territory	**Tweet Count**	**Total Sentiment**	**Average Sentiment**
Andhra Pradesh	224	9.73	0.04
Arunachal Pradesh	30	2.49	0.08
Assam	355	22.93	0.06
Bihar	1043	64.72	0.06
Chhattisgarh	253	7.55	0.03
Goa	236	12.34	0.05
Gujarat	1882	102.98	0.05
Haryana	783	43.29	0.06
Himachal Pradesh	179	13.21	0.07
Jammu & Kashmir	1008	45.72	0.05
Jharkhand	320	13.74	0.04
Karnataka	2314	87.63	0.04

Kerala	535	16.33	0.03
Madhya Pradesh	687	22.5	0.03
Maharashtra	1736	70.1	0.04
Manipur	25	-0.71	-0.03
Meghalaya	19	2.82	0.15
Mizoram	0	0	0
Nagaland	24	0.29	0.01
Odisha	510	20.15	0.04
Punjab	461	19.07	0.04
Rajasthan	1332	65.65	0.05
Sikkim	3	0.25	0.08
Tamil Nadu	1453	52.16	0.04
Telangana	922	25	0.03
Tripura	46	4.72	0.1
Uttar Pradesh	2285	114.27	0.05
Uttarakhand	269	12.1	0.04
West Bengal	1136	35.13	0.03
Andaman & Nicobar	7	0.67	0.1
Chandigarh	253	8.11	0.03
Daman & Diu	19	0.3	0.02
Delhi	986	41.55	0.04
Puducherry	50	1.77	0.04
Dadar & Nagar Haveli	0	0	0
Lakshadweep	0	0	0
Total Sentiment Score=183.960, Average Sentiment Score= 0.0319, Total tweets in states = 21385			

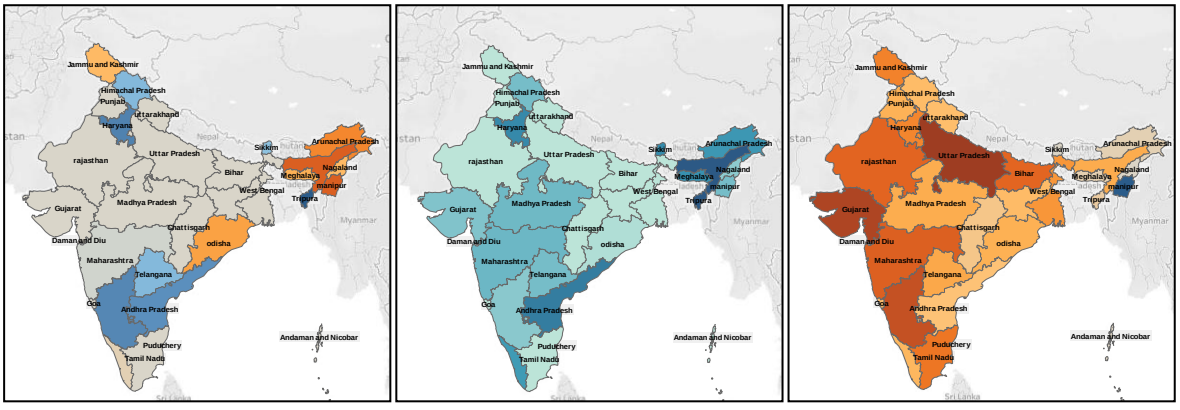

Fig.2. Campaign analysis representation in the map of India

The result of the subjectivity analysis concerning "MainBhiChowkidar" campaign shows that users had subjective opinions in more than half of the locations in India. Specifically, tweets from 15 states, including two union territories were observed as highly objective, where the subjectivity score is 0, which means participation in tweets was based on factual information not on emotions. On the other hand, tweets from Assam and Tripura were highly subjective (Subjectivity Score=1), which means users reflect diverse emotions and opinions than factual information. A higher score of subjectivity does not reflect a greater tendency to vote but tweets mentioning the campaign are more opinionated.

Further, outcomes from polarity analysis for Indian states depicts in Table 3 and Figure 3 depicts that the public sentiment in 9out of 35 locations were found to be negative, whereas neutral and positive in 16 and 8 spots respectively India. Thus, in the majority of states public mentioned favorably towards the campaign which may be the reason for its success of this

campaign. However, many studies posit the prediction of election results based on public tweet sentiment mentioning political candidates orparties, but this is restricted to exploring location-wise emotions and very few tried to map the location-based sentiment of a social media campaign with actual sentiments towards the party in terms of voting. Thus, polarity analysis in the current studyillustrates inconclusive results concerning opinions of online participation in campaigning with offline participation in voting for the concerned party.

V. CONCLUSIONS

Social media usage is not limited only to assisting in reaching a mass audience, but also to spreading the message more precisely, quickly and broadly, which can be personalized based on location. This study presented the location of the targeted audience to identify the reach of campaign engagement and to analyze the opinion on the campaign in a particular location. The current research emphasized exploring the sentiments for online participation on Twitter concerning the political campaign, MainBhiChowkidar.

Firstly, we observed knowledge of every voter is essential for political actors, whether voters are interested in politics, associated with a party, or belong to a specific segment of society, to encourage them to participate in politics online and offline. The results reveal that Professionals, Educators, Journalists, Entrepreneurs, Artists, Bloggers; Party Volunteers not only from India but also from several other countries showed the highest level of engagement with the campaign. Undoubtedly, it can be interpreted as people who have party association, or any link with politics are much more active in online participation followed by people from diverse professional fields who have an interest in politics as compared to others.

In addition, this study has used geographical location-based comparison rather than considering the content as a whole to have better insights. The results show that individuals from various parts of the country, especially Karnataka and Uttar Pradesh have confirmed more online participation in favor and against the political campaign led by the BJP, Indian Political Party. Besides, some involvement in supporting the campaign is found in other countries such as the United States, Pakistan, UAE, etc. Therefore, the popularity of the campaign was not limited to the country, but at the international level. Lastly, we explored the subjective and polarity based on the location of Tweets, which will contribute to examining public opinion using location-based sentiment analysis to get the results with higher accuracy. This study contributes to the advanced political marketing and voters' behavior analysis using machine learning techniques, unlike traditional research based on manual coding, interviews, etc. Secondly, employing supervised learning methods for knowing campaign participants is crucial to making personalized communication strategies. Also, examining topics in the campaign enables us to understand and track the popular topics, citizens do prefer while participating in a campaign that needs to be addressed. Last but not least, the importance of location variables for voters' participation and opinion in an online political campaign.

VI. LIMITATIONS AND FUTURE SCOPE

Every study has some limitations which provide guidelines for future research. Similarly, the current study is restricted to exploring location-based sentiments and online participation. Therefore, a detailed investigation can be done in the future to map location-based attitudes with offline participation in the form of voting, as votes in favor of the party on the locations where online participation in the campaign was active. This would help the party in ensuring better engagement with the public and enhanced voter political efficacy.

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