Identifying Nepali Political Leaders' Priorities Through Their Twitter Discourse

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Abstract—**Social media has become a major channel for political communication, allowing leaders to express priorities directly to the public. In Nepal, Twitter is widely used by political leaders, yet it remains unclear whether their online discourse emphasizes public welfare or party promotion. This study analyzes 3,293 tweets from prominent Nepali political leaders using a supervised text classification approach combining data preprocessing, keyword-based weak labeling, TF-IDF feature extraction, and Logistic Regression. Tweets were classified as Public-Issue–Focused or Party-Promotion–Focused, achieving an accuracy of approximately 79%. Leader-level priority analysis shows that while many leaders emphasize governance and public welfare, others focus more on party-centered messaging. Overall, the findings indicate that Nepali political leaders strategically balance public engagement and party promotion on Twitter, offering insights into their practical priorities and contributing to transparency in political communication.**

Keywords—**Nepali political leaders, Political Communication, Twitter, Twitter Analysis, text classification, public-issue-focused, party-promotion-focused, Machine Learning, social media analytics, priority score**

I. INTRODUCTION

Political communication has experienced a significant transformation worldwide, evolving from localized, in-person interactions and print-based media to modern digital platforms that enable instantaneous global reach [1], [4]. Historically, political priorities were conveyed through public speeches, town hall meetings, newspapers, and radio broadcasts. These channels were limited in frequency, accessibility, and geographic reach, often reflecting the perspectives of political elites rather than the broader population. With the rise of television and mass media in the twentieth century, political leaders began addressing regional and national audiences more consistently, shaping public discourse on governance, social welfare, and national identity [15].

In the twenty-first century, social media platforms such as Twitter, Facebook, and Instagram have fundamentally reshaped political communication by enabling leaders to communicate directly with citizens across diverse geographic regions in real time [2]. These platforms allow political actors to share policy updates, respond to crises, mobilize support, and engage in public discourse without traditional media gatekeeping. This digital transformation has enhanced public scrutiny, transparency, and citizen participation, enabling continuous observation of political priorities across different political and social contexts [9], [10].

In Nepal, these global trends are reflected locally. Social media now provides Nepali political leaders with the ability to reach both urban and remote populations, bridging historical communication gaps between political elites and ordinary citizens [15]. Twitter, in particular, has emerged as a significant platform for political expression, policy communication, and public engagement.

Studying Nepali political leaders' priorities through their Twitter discourse enables systematic identification of the issues that receive consistent attention. By analyzing keyword usage, thematic patterns, and topic frequency in tweets over time, it becomes possible to infer leaders' practical priorities beyond formal speeches, manifestos, and campaign promises [3]. Issues such as healthcare, education, disaster response, corruption, governance, national identity, and party promotion can be quantitatively and qualitatively examined to understand their relative prominence in political communication [8]. Comparative analysis across leaders and political parties further reveals whether digital communication strategies emphasize public welfare, governance concerns, or political promotion. Such analysis contributes to greater transparency and accountability in democratic systems and enables citizens, particularly young and digitally active populations, to make informed evaluations of political leadership based on consistent online behavior rather than symbolic rhetoric alone.

The objectives of this study are:

1. To identify the real political priorities of Nepali political leaders by analyzing the issues they consistently emphasize in their Twitter posts.
2. To understand whether these priorities reflect a focus on public welfare and governance or are mainly driven by political promotion.

II. LITERATURE REVIEW

The expansion of social media has fundamentally reshaped political communication by enabling politicians to directly articulate priorities, engage citizens, and influence public discourse without traditional media gatekeeping. Existing research consistently shows that platforms such as Twitter and Facebook function not only as channels for information dissemination but also as strategic arenas where political leaders signal issue importance, construct public personas, and mobilize political support.

Early studies highlight the role of personalization in online political communication. [1] demonstrates that politicians who adopt a relatable and personable tone on social media are perceived more favorably by constituents than those relying solely on formal or professional messaging. This suggests that visibility, approachability, and personal engagement often become implicit communication priorities in digital politics. Extending this argument, [2] find that social media platforms facilitate democratic interaction by enabling dialogue between politicians and citizens, though their effectiveness is constrained by inconsistent communication strategies and limited monitoring practices.

Methodological advances have further strengthened the systematic analysis of political discourse on social media. [3] propose a social media analytics framework that enables structured identification of politically relevant themes, making it possible to infer political priorities through recurring topics and issue salience. Agenda-setting research supports this analytical approach. [4] reveals a reciprocal relationship between Twitter and traditional media during election campaigns, indicating that political issues emphasized online both shape and reflect broader public agendas.

Individual and network-level dynamics also influence how political priorities are communicated and amplified. Research on opinion leadership shows that political interest, self-presentation motives, and persuasion goals drive online engagement, with influential users actively attempting to shape others' political attitudes [5], [6]. Additionally, leadership emergence is affected by network position, as central and broker actors gain influence depending on systemic equality within networks [7]. These findings suggest that political leaders' priorities expressed on social media are embedded within broader interaction networks rather than communicated in isolation.

Recent studies increasingly focus on citizens' responses to online political communication. Interactions with politicians on social media enhance perceived likeability and trust in government, reinforcing the strategic importance of engagement-oriented communication [8]. Among younger audiences, following politicians on social media increases exposure to political information and campaign engagement, while traditional news media play a diminishing role in shaping political awareness [9]. These trends indicate that issue prioritization on social media directly influences political participation.

In the Nepali context, emerging scholarship confirms the growing relevance of social media in political communication. Social media platforms significantly enhance political awareness and offline participation, positioning them as important tools for political socialization in Nepal [8]. Studies of electoral communication show that candidates often prioritize assertive and promotional messaging on social media rather than sustained policy-focused discussion [9]. Broader discourse analyses further reveal that online political communication in Nepal reflects power relations, identity construction, and gendered participation, particularly among women in politics [10], [11].

Recent empirical research also demonstrates the relationship between social media engagement and political sentiment in Nepal. Online reactions, comments, and shares have been shown to correlate with voter sentiment and electoral outcomes, indicating that social media activity can serve as a proxy for public support [13], [14]. At the same time, concerns regarding misinformation, filter bubbles, and declining trust in journalism highlight structural challenges associated with digital political communication [15], [16].

Overall, existing literature establishes that social media plays a central role in shaping political communication, agenda setting, and citizen engagement. However, despite growing scholarship in Nepal, there remains a clear gap in systematically identifying and comparing the substantive priorities of Nepali political leaders using Twitter discourse. Most existing studies emphasize engagement metrics, speech acts, or sentiment rather than issue salience and priority patterns over time. Addressing this gap, the present study analyzes Twitter discourse to determine whether Nepali political leaders primarily emphasize public-issue-focused concerns or party-promotion-oriented messaging, contributing empirical evidence to the study of digital political priorities in Nepal.

III. DATASET DESCRIPTION

The dataset consists of 3,293 tweets collected from the official and verified Twitter (X) accounts of prominent Nepali political leaders [12]. These leaders were selected due to their active presence on social media and their significant roles in national politics, making their online discourse suitable for analyzing political priorities.

Each tweet record includes the following attributes:
- username – the Twitter handle of the political leader
- full_text – the complete textual content of the tweet

The dataset primarily contains tweets written in Nepali and English, reflecting the bilingual nature of political communication in Nepal. Prior to analysis, the dataset was examined for missing values and all tweets containing valid textual content were retained for preprocessing.

This dataset is appropriate for the study as Twitter posts represent spontaneous and time-stamped political communication, allowing the analysis of issue emphasis and

consistency over time. By examining the content of these tweets, the study aims to identify whether Nepali political leaders prioritize public-issue–focused communication (such as governance, public welfare and national concerns) or party-promotion–focused messaging.

IV. METHODOLOGY

This study adopts a supervised text classification approach to identify whether tweets posted by Nepali political leaders are Public-Issue–Focused (PIF) or Party-Promotion–Focused (PPF). The methodology consists of five major components: data preprocessing, manual annotation, feature representation, supervised model training and computation of a leader-level priority score.

A. Data Cleaning and Preprocessing

Raw Twitter data contains noise such as URLs, mentions, emojis, and mixed Nepali English text. To convert tweets into an analyzable form, the following preprocessing steps are applied sequentially:

1. All hyperlinks are removed as they do not contribute to the semantic meaning of tweets. Example: https://t.co/xyz → *(removed)*
2. Removal of User Mentions
   Mentions are removed to avoid bias toward specific users. Example: @PM_Nepal → *(removed)*
3. Hashtag Processing
   The hashtag symbol (#) is removed while retaining the keyword. Example: #education → education
4. Lowercasing
   All text is converted to lowercase to ensure uniform representation.
5. Removal of Emojis and Special Characters
   Emojis and non-textual symbols are removed using regular expressions, retaining only meaningful textual content.
6. Commonly occurring words that do not add semantic
   value are removed using:
   - A custom Nepali stopword list (Devanagari and Romanized forms)
   - Standard English stopwords from NLTK
   Examples of Nepali stopwords: म, हामी, को, मा, ले, छ, छन्, थियो, हुन्छ, भयो, पनि, मात्र
7. Tokenization
   Each tweet is split into individual words. Example: "शिक्षा मा लगानी" → ["शिक्षा", "लगानी"]
8. Stemming and Light Normalization
   - English words are stemmed using Porter Stemmer
     investing, investment → invest
   - Nepali words are lightly normalized using rule-based suffix removal
     गरेको, गर्छ → गर
   After preprocessing, each tweet is transformed into a clean and normalized textual representation.

B. Label Generation (Weak Supervision / Rule-Based Annotation)

To reduce the effort of manual labeling, a rule-based keyword matching approach was used to automatically assign labels to a subset of tweets. This method identifies whether a tweet is Public-Issue–Focused (PIF) or Party-Promotion–Focused (PPF) based on the occurrence of predefined keywords in both Nepali and English.

Keyword Categories:
- PIF Keywords: Terms related to governance, development, health, education, economy, infrastructure, disaster response, law and order, human rights, environment, and foreign policy.
- PPF Keywords: Terms associated with party activities, rallies, elections, vote appeals, cadres, leadership praise, and party achievements.

Labeling Procedure:
- Tweets containing any PPF keyword were automatically labeled as PPF = 1.
- Tweets containing any PIF keyword were labeled as PIF = 0.
- Tweets without any matching keywords were excluded from the training set.

Note: PPF keywords take priority over PIF keywords. If a tweet contains both PPF and PIF keywords, it is labeled as PPF = 1.

These auto-generated labels served as weak supervision for training the Logistic Regression classifier, enabling the model to generalize beyond the predefined keyword lists and classify all tweets in the dataset.

C. Feature Extraction Using TF-IDF

Textual data is converted into numerical features using Term Frequency–Inverse Document Frequency (TF-IDF).
- Term Frequency (TF): Measures how frequently a word appears in a tweet [17].
- Inverse Document Frequency (IDF): Reduces the importance of very common words across tweets

Each tweet is represented as a TF-IDF weighted vector, with a maximum of 5,000 features, capturing the importance of words across the corpus.

D. Supervised Classification Using Logistic Regression

A Logistic Regression classifier is trained using TF-IDF features to classify tweets.

Model Characteristics
- Classifier: Logistic Regression
- Input: TF-IDF feature vectors
- Loss Function: Binary Cross-Entropy (Log Loss)
- Output: Probability of a tweet being PIF or PPF
- Data Split: 80% training, 20% testing (stratified)

Model performance was evaluated using accuracy, precision, recall and F1-score. The trained model was then applied to classify all tweets in the dataset.

E. Leader-Level Priority Score Computation

After classifying all tweets, a Priority Score (PS) is computed for each political leader.
Let:

- PIF_i = Number of Public-Issue–Focused tweets by leader i
- PPF_i = Number of Party-Promotion–Focused tweets by leader i

Priority Score Formula

$$PS_i = \frac{PIF_i}{PIF_i + PPF_i}$$

Interpretation

- PS → 1: Strong focus on public issues
- PS → 0: Dominance of party promotion

The PIF_i : PPF_i ratio reflects how frequently a leader prioritizes public issues relative to party-centric messaging.

V. FINDINGS AND RESULTS

This section presents the empirical findings obtained from applying the proposed text classification framework to the Twitter dataset of Nepali political leaders. The results are organized into model performance evaluation, tweet-level classification outcomes, and leader-level priority analysis.

A. Tweet Classification Performance

The TF-IDF–based Logistic Regression classifier was evaluated on a stratified 20% held-out test set consisting of 378 tweets. Model performance was assessed using accuracy, precision, recall, and F1-score.

1) Overall Accuracy

The classifier achieved an overall accuracy of 79.9%, indicating that nearly four out of five tweets were correctly classified as either Public-Issue–Focused (PIF) or Party-Promotion–Focused (PPF). This shows that the model is generally reliable in distinguishing between the two categories of political communication.

2) Class-wise Performance

```
Accuracy: 0.798941798941799
Classification Report:
              precision    recall  f1-score   support

           0       0.78      0.82      0.80       183
           1       0.82      0.78      0.80       195

    accuracy                           0.80       378
   macro avg       0.80      0.80      0.80       378
weighted avg       0.80      0.80      0.80       378
```

Class-wise evaluation highlights the model's strengths and weaknesses for each tweet category:

a) Public-Issue–Focused (PIF) Tweets:

- Recall = 0.82: The model correctly identifies 82% of all actual PIF tweets, showing effectiveness in capturing governance, development, and public-service–related content.
- Precision = 0.78: Some tweets predicted as PIF may not actually belong to this class, but overall prediction accuracy is still high.
- F1-score = 0.80, indicating balanced performance in detecting PIF content.

b) Party-Promotion–Focused (PPF) Tweets:

- Recall = 0.78: The model correctly captures 78% of actual PPF tweets, slightly lower than for PIF.
- Precision = 0.82: The tweets predicted as PPF are mostly correct, suggesting that party-related messaging is explicit and easier for the model to identify.
- F1-score = 0.80, showing consistent performance across classes.

The macro-averaged F1-score of 0.80 confirms that the model performs consistently across both tweet categories, while the weighted-average F1-score also reflects balanced performance considering the class distribution.

B. Distribution of Classified Tweets

After applying the trained model to the full dataset of 3,293 tweets, the predicted labels reveal a relatively balanced distribution between Public-Issue–Focused (PIF) and Party-Promotion–Focused (PPF) tweets.

This balance suggests that Nepali political leaders use Twitter for dual purposes:

- As a platform for issue-based communication, sharing updates on governance, development, and public welfare.
- As a channel for party mobilization and organizational messaging, promoting party activities, campaigns, and internal events.

The near-equal presence of both categories highlights Twitter's dual role in Nepal's political landscape, serving simultaneously as a medium for public engagement and political branding. This balance indicates that leaders do not focus exclusively on one type of messaging, but strategically combine issue advocacy with party promotion in their social media communication.

C. Leader-Level Priority Score Analysis

To assess individual leaders' communication priorities, a Priority Score (PS) was computed for each leader using the ratio of PIF tweets to total classified tweets:

$$PS_i = \frac{PIF_i}{PIF_i + PPF_i}$$

Interpretation of Priority Score

- $PS \approx 1.0 \rightarrow$ Strong emphasis on public issues
- $PS \approx 0.5 \rightarrow$ Balanced communication strategy
- $PS \approx 0.0 \rightarrow$ Dominant focus on party promotion

A higher PS indicates greater emphasis on public-issue communication, while a lower PS indicates stronger focus on party promotion.

1) Top Public-Issue–Focused Leaders

Leaders with the highest Priority Scores consistently emphasize governance, development, and public welfare topics in their Twitter communication.

```
Top Public-Issue-Focused Leaders:
         Leader  PIF  PPF  Priority Score
     amanlalmodi    1    0        1.000000
     Krishnacpnus   39    7        0.847826
   GokarnaRajBista   75   20        0.789474
     chandra_1961   78   22        0.780000
    paudelpradipNC   62   18        0.775000
     MPnishadangi   63   19        0.768293
    ToshimaKarkiDr   68   21        0.764045
    NCPurnaKhadka   90   30        0.750000
      ManavJyotee   34   12        0.739130
    ashimshahnepal   56   21        0.727273
    SumanaShrestha   70   28        0.714286
    Himalayabiraj   63   29        0.684783
    MaMaheshBasnet   41   24        0.630769
     SwarnimWagle    5    3        0.625000
    yogesbhattarai   50   32        0.609756
       hamrorabi   58   40        0.591837
         thapagk   59   41        0.590000
    Bidyabhattarai   23   16        0.589744
        Shekharnc   58   42        0.580000
          shisir   22   16        0.578947
```

These leaders demonstrate a strong emphasis on public-issue communication, focusing on governance, development, public services and societal concerns rather than internal party promotion.

2) Top Party-Promotion–Focused Leaders

Leaders with the lowest Priority Scores are most focused on party promotion, campaigns, and political branding.

```
Top Party-Promotion-Focused Leaders:
         Leader  PIF  PPF  Priority Score
       PMSinghNC   25   75        0.250000
         NPSaudnc   35   85        0.291667
   DrShashankKoir1   36   64        0.360000
     khanabdul_24   41   63        0.394231
    BinodKChaudhary   41   59        0.410000
    ncp_madhavnepal   43   57        0.430000
    dolprasadaryal   37   46        0.445783
        sobita465   16   19        0.457143
       cmprachanda   46   54        0.460000
     udayasjbrana   57   63        0.475000
         dhanrgrg   48   52        0.480000
       SherBDeuba   39   41        0.487500
    RajendraLingden   34   35        0.492754
    ArjunNarasingha   50   50        0.500000
    Bhanubhakta99    1    1        0.500000
        drckraut   84   80        0.512195
    RamhariKhatiwa   41   39        0.512500
    manishjhanepal   41   39        0.512500
        DrPSMahat   52   48        0.520000
    BimalendraNidhi   57   43        0.570000
```

These leaders prioritize party-centered messaging, focusing on organizational activities, rallies, elections and internal party communication, with relatively less emphasis on public issues. This contrast highlights differences in communication strategies among leaders, from outward-facing public issue advocacy to internal party promotion.

D. Ratio Score Interpretation

In addition to the Priority Score, a Ratio Score was computed for each leader:

$$\text{Ratio Score}_i = \frac{PIF_i}{PPF_i}$$

This metric indicates how many public-issue tweets a leader post for every party-promotion tweet.

- Ratio > 1.0 → More emphasis on public issues
- Ratio ≈ 1.0 → Balanced messaging between public issues and party promotion
- Ratio < 1.0 → Stronger emphasis on party promotion

For example, Krishnacpnus has a ratio of 5.57, meaning that for every party-promotion tweet, they post approximately five public-issue tweets. Leaders with very high ratios focus almost exclusively on public issues while those with very low ratios prioritize party promotion.

E. Visualization-Based Findings

Graphical analysis further supports the numerical findings:
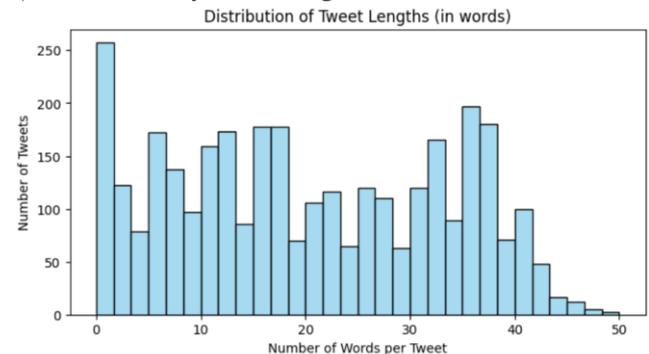
1) Distribution of Tweet Lengths

Fig.1. *Distribution of Tweet Lengths*

The figure shows how many words Nepali political leaders typically use in their tweets. Most tweets fall within a moderate length range, indicating a preference for concise yet informative communication suitable for Twitter's fast-paced environment. Short tweets generally relate to quick announcements or party messages, while longer tweets often address public issues or provide clarifications on ongoing events. The small number of very long tweets suggests that detailed policy discussions are less common on Twitter. Overall, the distribution shows that leaders mainly use Twitter for brief but meaningful communication while occasionally providing extended issue-based explanations.
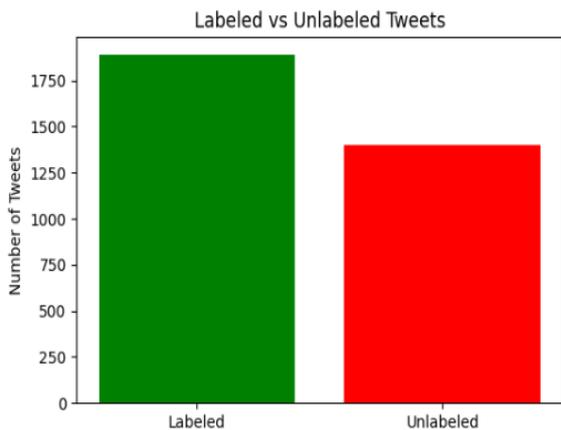
2) Labeled vs Unlabeled Tweets

Fig.2. *Labeled vs Unlabeled Tweets*

The figure compares tweets that were successfully labeled as Public-Issue–Focused (PIF) or Party-Promotion–Focused (PPF) with those that remained unlabeled. Most tweets fall into the labeled category, showing that political communication on Twitter generally contains clear signals of either issue-based or party-centered intent. The smaller proportion of unlabeled tweets reflects content such as greetings, condolences, ceremonial messages, and neutral statements. This distribution reveals that while leaders use Twitter primarily for purposeful political messaging, they also post non-classifiable content for social engagement and maintaining public presence.

3) Overall Distribution of Tweet Types Among Leaders
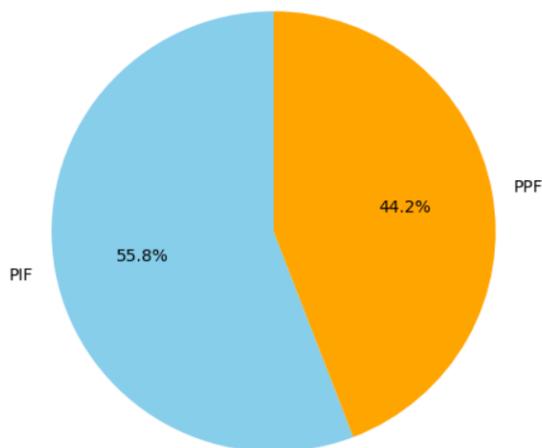
Fig.3. *Overall Distribution of Tweet Types Among Leaders*

The figure illustrates the proportion of Public-Issue–Focused and Party-Promotion–Focused tweets across all leaders. Public-issue communication forms the majority, showing that leaders more often discuss national concerns, policies, and public events. Party-promotion tweets form a smaller yet meaningful share, indicating ongoing use of Twitter for organizational visibility and internal politics. Overall, the distribution highlights that issue-based communication dominates but party promotion remains an important secondary function on Twitter.

4) Comparison of Public Issue Focused Tweets and Party Promotion Focused Tweets Across Leaders
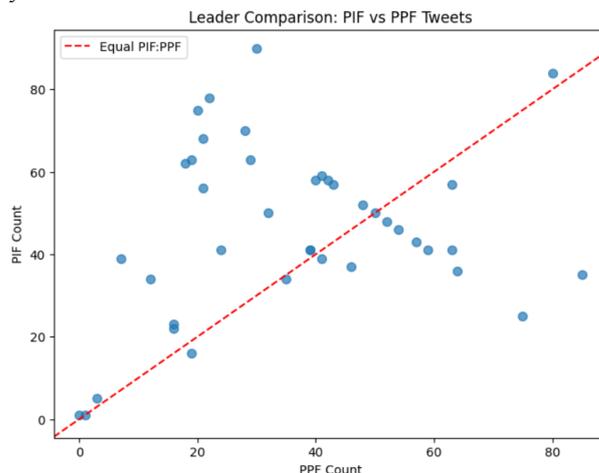

Fig.4. *Comparison of PIF and PPF Tweets Across Leader*

The scatter plot compares each leader's number of PIF and PPF tweets, with the red line showing where the two counts would be equal. Most leaders appear above the line, meaning public-issue tweets exceed party-promotion tweets for the majority. A few leaders fall near the line, showing a balanced communication style, while only a small number fall below it, indicating slightly stronger party-promotion activity. Overall, the plot shows that leaders tend to prioritize public-issue communication more consistently than party-centered messaging.

5) Top Leaders' Emphasis on Public-Issue–Focused Communication
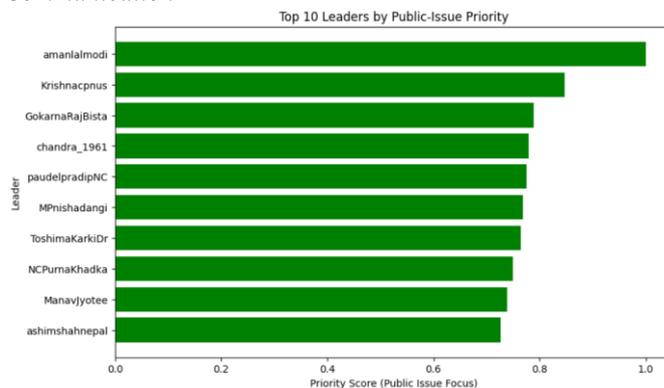

Fig.5. *Top Leaders' Emphasis on Public-Issue–Focused Communication*

The figure ranks leaders based on their Priority Score, which measures the share of PIF tweets relative to total political content. Leaders at the top, such as amanlalmodi, Krishnacpnus, and GokarnaRajBista, show a strong emphasis on governance and public issues, with scores close to 1.0. Others in the top ten also maintain issue-focused communication, though with a slightly more balanced mix of PIF and PPF content. Overall, the visualization highlights that the highest-ranking leaders use Twitter primarily to engage with national problems and policy matters rather than party promotion.
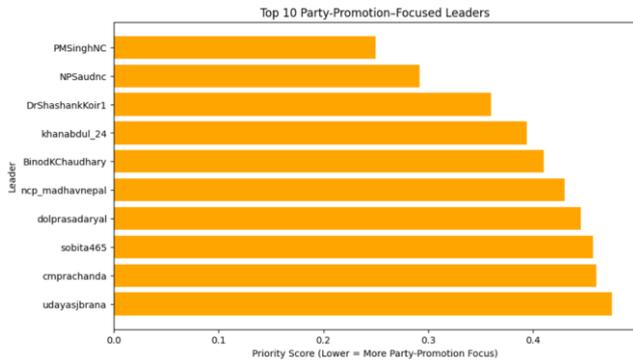
6) Top 10 Leaders by Party-Promotion Focus

Fig.6. *Top 10 Leaders by Party-Promotion Focus*

This figure displays leaders with the lowest Priority Scores, meaning they focus more on party-promotion content. PMSinghNC ranks highest in party-centered communication, followed by NPSaudnc, DrShashankKoir1, and khanabdul_24. These leaders frequently post about party activities, internal events, and organizational messaging. Others in the list show a mix of both PIF and PPF content but still lean toward party promotion. Overall, the figure highlights that a subset of leaders prioritizes party visibility and branding more than issue-based engagement.

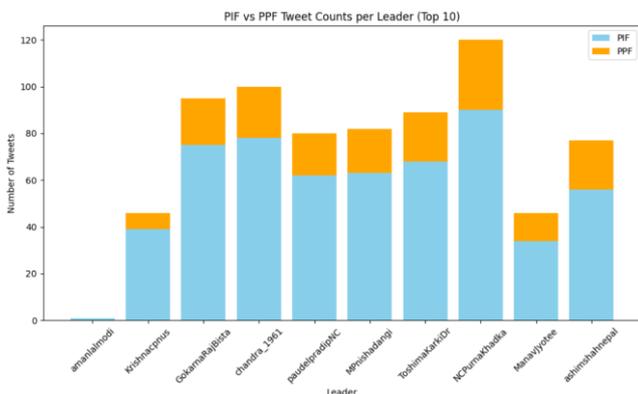*7) PIF and PPF Tweet Distribution Among the Top Ten Leaders*

Fig.7. *PIF and PPF Tweet Distribution Among the Top Ten Leaders*

This bar chart compares the number of Public-Issue–Focused and Party-Promotion–Focused tweets among the ten most active leaders. Most leaders, such as GokarnaRajBista, chandra_1961, and ToshimaKarkiDR, show far more PIF tweets, indicating a strong public-issue orientation. Some leaders, like paudelpradipNC and Mpnishadangi, present a more balanced mix with notable party-promotion activity. A few leaders, including amanlalmodi, have low total tweet counts, reflecting lower platform engagement overall. In general, the distribution demonstrates that public-issue content dominates among active leaders, with party promotion playing a smaller but noticeable role.

VI. SUMMARY OF KEY FINDINGS

- The machine learning classifier achieved ~80% accuracy, showing strong reliability in distinguishing PIF vs. PPF tweets.
- Most leaders show a higher tendency toward public-issue–focused communication, especially on governance, development, health, and education.
- A smaller group of leaders predominantly post party-centered messages, such as rallies, campaigns, and internal party activities.
- Tweet distribution indicates that both content types are common, reflecting Twitter's dual role as a public-engagement tool and a party-branding platform.
- Priority Scores reveal clear differences among leaders, with some consistently prioritizing public welfare while others emphasize party promotion.
- Word frequency and thematic patterns show that public service, development, and national issues dominate the overall political discourse.
- The analysis highlights that Nepali political leaders strategically balance issue advocacy and party messaging rather than focusing exclusively on one side.

VII. LIMITATIONS AND ETHICAL CONSIDERATIONS

This study relies on keyword-based weak supervision to generate initial labels for training the classification model. While this approach enables scalable analysis of large social media datasets, it may introduce labeling noise due to contextual ambiguity in short tweets. However, the use of a supervised machine learning classifier allows the model to generalize beyond predefined keywords and capture broader linguistic patterns.

The dataset was collected exclusively from publicly available and verified Twitter (X) accounts of political leaders. No private data were accessed, and no content was modified or generated. The analysis was conducted solely for academic research purposes, with the objective of understanding communication patterns rather than evaluating individual political performance.

VIII. CONCLUSION

This study shows that Nepali political leaders use Twitter for both public-issue communication and party promotion, balancing governance-related messages with political branding. The machine learning model effectively distinguished between these two categories with nearly 80% accuracy. Leader-level analysis revealed significant variation: some leaders consistently emphasize public welfare, while others focus more on party activities. Overall, Twitter serves as a dual platform for public engagement and political promotion, offering insight into leaders' authentic priorities and contributing to greater transparency in Nepali political communication.

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