Influencer Marketing Sentiment Analysis

Mrs. K Santhi Priya, Assistant Professor, Madutha Sphoorthi, Yellaboina Mamatha, Kapparam Kanchana

Dept. Of AI, Vidya Jyothi Institute Of Technology, Aziz Nagar Gate, C.B.Post, Hyderabad.

ABSTRACT

Influencer marketing has become a crucial aspect of modern digital marketing strategies, utilizing the reach and credibility of social media personalities to enhance brand visibility and consumer engagement. This project aims to conduct a sentiment analysis of influencer marketing campaigns to assess public opinion and emotional responses toward these promotions. By employing Machine Learning techniques on social media data, this study identifies sentiment trends, evaluates the effectiveness of influencer content, and offers actionable insights for optimizing future campaigns.

KEYWORDS

Influencer Marketing, Sentiment Analysis, Engagement Metrics, Social Media Analytics, Natural Language Processing, Audience Behavior, Data Visualization.

1. INTRODUCTION

Influencer marketing has become one of the most effective strategies through which brands can engage with their audiences in a more natural and effective way. Social media influencers with their many followers and relatable content have become important in influencing consumer behavior. However, identifying the real success of influencer marketing campaigns is a complex task. Standard metrics, which include the number of followers and likes, are inadequate for measuring the audience's affective state and the level of engagement.

This paper seeks to fill this gap by developing a framework which incorporates sentiment analysis of audience reactions to engagement metrics in order to give a more rounded view of influencer campaigns. Based on the data gathered from YouTube, the system is capable of identifying the sentiment of the comments as positive, negative or neutral and then relates it with views, likes and number of comments to come up with a performance score. By using Streamlit, a user-friendly dashboard is created where users can interact with the data, compare different influencers and analyze the results.

The suggested solution not only improves the evaluation process but also provides the brands with the necessary tools to make the right decisions about their future campaigns. This paper also shows the methodology, the application and the output of this approach and how it can revolutionize influencer marketing analytics.

2. LITERATURE REVIEW

The role of sentiment analysis in influencer marketing has been extensively studied across various domains. This section synthesizes key works that have influenced the methodology and objectives of this research.

Sentiment Analysis and Social Media Engagement

Sentiment analysis has emerged as a powerful tool in competitive research, capturing audience perceptions and informing strategic decision-making [1]. Engagement metrics such as likes, comments, and shares reflect the effectiveness of online campaigns and serve as foundational elements for integrating sentiment data into influencer marketing analytics [2].

The correlation between sentiment and engagement, particularly on platforms like YouTube, has been explored, demonstrating the importance of sentiment-weighted metrics in

providing a nuanced perspective on influencer performance [6]. These insights have directly informed this study's approach to computing Sentiment Weighted Engagement (SWE).

Evaluating Influencers Through Credibility and Sentiment

The impact of influencer credibility on audience perceptions and campaign effectiveness is significant, with factors like sponsorship disclosures playing a critical role [3]. The quantification of influencers' impact through sentiment analysis has also been emphasized, where audience emotions act as key determinants of marketing success [4].

Over-reliance on basic metrics such as follower counts has been critiqued, with calls for advanced metrics like engagement rates and sentiment scores to provide a more comprehensive evaluation of influencers [7]. This perspective supports the development of composite metrics, aligning with the methodology employed in this study.

Identification and Advanced Analysis of Influential Users

The identification of influential users in social networks has been achieved by combining sentiment analysis with engagement metrics, an approach closely aligned with the goals of this research [5]. The evolution of social media metrics, moving from basic interactions to advanced analytics, underscores the need for sophisticated tools to uncover deeper insights [10].

Emotional Connections and Data Processing

Emotional connections reflected in audience comments play a pivotal role in campaign success, reinforcing the importance of sentiment analysis in evaluating marketing effectiveness [9]. Additionally, preprocessing and data cleansing techniques are critical for ensuring the accuracy of engagement metrics like SWE, which is an integral part of this study's methodology [8].

3. METHODOLOGY AND IMPLEMENTATION

Using YouTube influencer data, the dataset in the study consists of columns describing each influencer channel:

- Channel Name: The name of the influencer's YouTube channel.
- Subscriber Count: The number of people who subscribe to the channel.
- Average Views per Video — Average number of views per video.
- Engagement Rate: Proportion of likes, comments, and shares to total views.
- Total Score: An aggregate score combining several engagement metrics
- Sentiment Score: The average sentiment of the comments inferred by sentiment analysis techniques estimates by VADER and TextBlob.
- Positive: Number of comments identified as positive
- Neutral: Number of neutral comments.
- Negative: The number of comments classified as negative.

Sentiment Score (SS): Each video has the respective positive, neutral or negative classification of the comments.
To calculate the Sentiment Score (SS) for each video, the sentiment of individual comments is classified as positive, neutral, or negative. The overall sentiment score of an influencer is the average of all comment sentiment scores.

$$SS = \sum N Sentiment(C_i)$$

Engagement Metrics Calculation (ES): To calculate the engagement score for each video, we use the following weighted sum formula, where α, β, and γ are weights for views, likes, and comments respectively.
$$ES = \alpha \times Views + \beta \times Likes + \gamma \times Comments$$

$$(\alpha=0.5, \beta=0.3 \; \gamma=0.2)$$
Finally, the **Sentiment Weighted Engagement (SWE)** score is computed by multiplying the Sentiment Score (SS) by the Engagement Score (ES):

$$SWE = SS \times ES$$

Data Analysis

The calculated metrics (SS, ES, SWE) were aggregated at the channel level to analyze influencer performance. Influencers were ranked based on their Sentiment Weighted Engagement (SWE) to identify top-performing individuals.

4. ARCHITECTURE

The architecture of the system is composed of multiple components working together to process the influencer marketing data. The components include data collection, preprocessing, sentiment analysis, metric calculations, ranking, and the user interface. Architecture Diagram:

Below is a high-level architecture diagram to illustrate the key components:
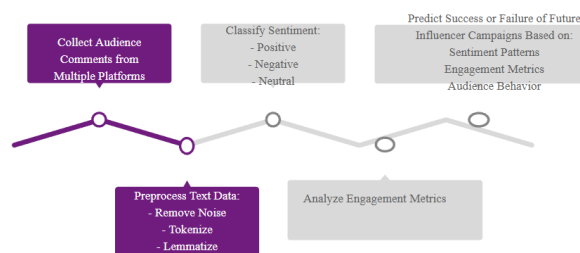
5. RESULTS AND DISCUSSION

The dataset analysis reveals several interesting patterns:

- **Correlation between Engagement and Sentiment**: A positive correlation between engagement metrics (views, likes, comments) and sentiment was observed. However, high engagement does not always guarantee a high SWE score, as negative sentiment can lower the overall effectiveness.

- **Influencer Ranking**: By calculating the SWE scores for multiple influencers, those with higher sentiment and engagement were ranked higher in terms of their ability to influence audiences. This suggests that sentiment is a key factor in determining the success of an influencer's campaign.

Impact of Sentiment on Engagement: The analysis also highlights those influencers with higher positive sentiment in their comments performed better in terms of both engagement and SWE score, even when compared to influencers with larger audiences but more negative sentiment.
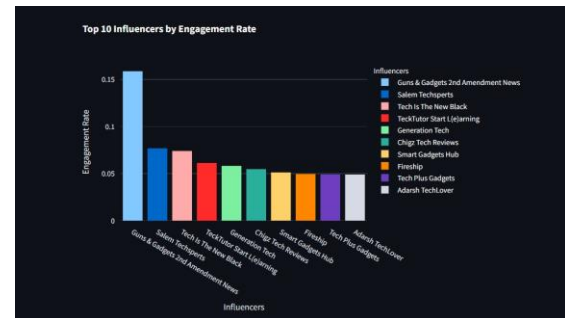
Top Influencer based on Engagement Rate

6. Limitations of The Study

The limitations of this study highlight several areas where the analysis could have been more comprehensive. By focusing only on YouTube as the platform and specific categories as the subjects of analysis, the study narrows its scope, which may impact the generalizability of its results to other platforms or influencer fields. Furthermore, the exclusion of certain engagement metrics and sentiment dimensions leaves out critical insights that could offer a fuller understanding of influencer impact. Future studies would benefit from broadening the scope to include multiple platforms, areas, and a wider array of engagement metrics, as well as more advanced sentiment analysis techniques that capture the complexity of influencer content and audience interactions.

6. Conclusion

This paper presents a novel approach to evaluating influencer marketing effectiveness by introducing the Sentiment Weighted Engagement (SWE) score. By integrating sentiment analysis with traditional engagement metrics such as views, likes, and comments, the SWE score provides a more nuanced and comprehensive measure of influencer performance. The results suggest that both sentiment and engagement are critical to assessing influencer marketing success. This

methodology can be applied to various platforms beyond YouTube, providing valuable insights for brands seeking to optimize their influencer marketing strategies.

References:

[1]   H. Taherdoost and M. Madanchian, "Artificial Intelligence and Sentiment Analysis: A Review in Competitive Research."

[2] M. Trunfio and S. Rossi, "Conceptualising and Measuring Social Media Engagement: A Systematic Literature Review."

[3] S. Lee and E. Kim, "Influencer Marketing on Instagram: How Sponsorship Disclosure, Influencer Credibility, and Brand Credibility Impact the Effectiveness of Instagram Promotional Posts."

[4] S. Agarwal and M. Damle, "Sentiment Analysis to Evaluate Influencer Marketing: Exploring Parameters of Influence."

[5] S. Al-Otaibi, A. Al-Rasheed, B. AlHazza, H. A. Khan, G. AlShfloot, M. AlFaris, N. AlFari, N. AlKhalaf, and N. AlShuweish, "Finding Influential Users in Social Networking Using Sentiment Analysis."

[6] P. Sharma and R. Gupta, "The Role of Sentiment in Enhancing Social Media Engagement Metrics for Influencers."

[7] E. Johnson and A. Clarke, "Beyond Follower Counts: Advanced Metrics for Evaluating Influencers in Marketing Campaigns."

[8] C. Martinez and S. O'Brien, "Integration of Machine Learning in Sentiment Analysis for Marketing Strategies."

[9] S. Becker and D. Hayes, "Emotional Connections and Their Impact on Social Media Campaign Success."

[10] M. Nguyen and R. Patel, "The Evolution of Social Media Metrics: From Basic Interactions to Sentiment Analysis and Advanced Insights."