EXPLORING THE IMPACT OF EMOJI USAGE ON USER ENGAGEMENT IN YOUTUBE COMMENTS

Ishan Basak

Research Idea:

The study aims to explore how using emojis in user comments on YouTube videos affects the number of likes those comments receive. This investigation was sparked using emojis on YouTube to express emotions, reactions, and feelings. By analyzing a collection of user comments from a video by Mr. Beast the research seeks to understand how different emojis in comments impact engagement metrics, specifically the number of likes garnered.

The research intends to investigate whether including emojis in user comments leads to increased engagement levels as reflected in the number of likes received. Furthermore, it seeks to pinpoint emojis that tend to provoke positive responses from viewers. Through an analysis of emoji usage trends and their relationship with engagement metrics this study aims to shed light on how emojis influence user interactions and communication dynamics on YouTube.

Null Hypothesis (H0): The presence of emojis in user comments on YouTube videos is correlated positively with the number of likes those comments receive. Key aspects of the research idea include:

1. **Emoji Usage Patterns:** The study will investigate how often and where emojis appear in user comments on a YouTube video. By organizing emojis by type and how frequently they are used the study aims to spot emoji trends within the data.

2. **Engagement Metrics:** The main focus is on the number of likes that user comments receive. The study will investigate whether types of emojis lead to higher engagement levels.

3. **Sentiment Analysis:** Apart from studying emoji usage the research will also analyze the sentiment of user comments to gauge their tone. By sorting comments into negative or neutral categories the study hopes to understand how emotions in comments relate to emoji use and engagement metrics.

4. **Statistical Analysis**: Using correlation analysis, the research plans to explore how emoji usage relates to metrics. Hypothesis testing will help determine if having emojis in comments is linked to receiving likes.

In summary this research intends to deepen our understanding of how emojis influence user engagement and communication patterns, on YouTube. The research seeks to offer observations on how the use of emojis impacts engagement metrics aiming to enrich the existing body of knowledge, on digital communication and social media interaction.

Literature Review:

Emojis are now widely used in conversations adding visual elements to text messages that express feelings, attitude and meaning. To explore how emojis impact user interactions on YouTube, in terms of likes and engagement it is crucial to study various psychological, communication and information science theories and research findings.

Theory of Emotional Contagion

The theory of emotional contagion suggests that feelings can be passed from one person to another resulting in shared emotional reactions and actions (Hatfield, Cacioppo, & Rapson, 1994). In the realm of interactions emojis act as powerful tools for expressing emotions allowing individuals to communicate and understand feelings more effectively compared to just text (Derks, Fischer, & Bos, 2008). Emojis help convey states promoting a sense of connection and shared emotions among users (Kaye et al., 2016).

Therefore, comments with emojis can elicit reactions, in other readers boosting interaction through the spread of emotions.

Information Processing Theory:

According to the theory of information processing people tend to understand and remember information better when it is shown visually or symbolically (Mayer, 2001). Emojis serve as tools that complement text helping to improve the understanding and retention of messages (Dresner & Herring 2010). When users add emojis to their comments it can make their messages clearer and more expressive increasing the chances of receiving likes and positive responses (Vanden Abeele, Antheunis, & Schouten, 2016). Emojis play a role in conveying complex emotions and social cues in a simple and intuitive way, which can boost user engagement and interaction outcomes (Tossell et al., 2012).

Research on Emoji Usage and Engagement:

Research based on observations has shed light on how using emojis affects user interaction on different online platforms. Studies indicate that including emojis in social media posts leads to levels of user engagement such as receiving more likes, shares, and comments (Miller et al., 2016). Emojis help make messages more appealing and effective in communication by grabbing attention and evoking reactions from viewers (Lu, Xu, & Song, 2018). Moreover, the emotional tone conveyed by emojis plays a role in shaping how users perceive and respond to content; positive emojis tend to garner favorable reactions compared to neutral or negative ones (Kaye et al., 2016). However, the impact of emojis on engagement can vary depending on factors, like the platform used, the demographics of the audience and the context of the communication (Derks et al., 2008).

Implications for YouTube Comments:

In the world of YouTube comments emojis play a role in improving how people communicate and connect with one another. Emojis are used by both creators and viewers to show emotions, share feedback, and engage visually with each other. Using emojis in comments can show enthusiasm and emotional involvement encouraging others to react with likes and supportive replies. However, the impact of emojis on engagement may vary depending on factors like which emojis are used, where they are placed, how often they appear and if they match the videos content.

Conclusion:

The review of literature discusses the foundations and research results that shape the exploration of how emojis are used and interacted with in comments on YouTube. Theories like emotional contagion theory and information processing theory provide perspectives on how emojis impact user interactions and communication results. By incorporating knowledge from studies this current research seeks to enhance our comprehension of how emojis promote engagement and emotional communication, within the YouTube community.

Research Design and Data Collection:

1. Research Design:

The study uses a numbers-based method to explore how using emojis in comments on YouTube videos relates to the amount of likes those comments get. They look at data from a moment in time to see how things like emoji use and user engagement connect focusing on a video by Mr. Beast, on YouTube.

2. Data Collection:

Data collection involves several steps:

a. **Selection of YouTube Video:** The study involved collecting data on a well-known Mr. Beast YouTube video. To guarantee a representative dataset for analysis, a significant number of comments—182,545 to be exact—have been added to the selected experiment. This is an illustration of the experiment's substantial sample size.

b. **Accessing YouTube Data API:** The procedure was opening an account with Google Developers and gaining access to the YouTube Data API. Then, retrieving comments, likes, and other pertinent information related to the chosen YouTube video was possible with this API.

c. **Data Extraction**: From the chosen YouTube video, we took user comments out using the YouTube Data API. The dataset contains metadata like the timestamp and username of the commenter, as well as the text of the comments and the amount of likes they have got.

d. **Cleaning and Preprocessing:** To guarantee data quality and consistency, the extracted data was cleaned and preprocessed. This includes addressing missing values, eliminating redundant comments, and standardizing the format of the language in comments. The information is further divided into the different sorts of emojis, their numbers, sentiment scores, and matching p-values (for correlation analysis).

e. **Emoji Extraction:** The goal of the project is to use suitable text processing methods or libraries to extract emojis from the comment text. Emoji types and frequency are determined by analyzing each comment.

f. **Sentiment Analysis:** Analysis of sentiment is done to evaluate the emotional content of user remarks. Based on the prevalence of emotionally charged language and sentiment markers, comments are divided into three sentiment categories: positive, negative, and neutral.

g. **Statistical Analysis:** To investigate the connection between emoji usage and engagement metrics (likes, for example), statistical analysis is done. The research hypothesis is tested and the relationships between the variables are examined using correlation analysis and hypothesis testing.

3. Ethical Considerations:

When gathering and analyzing data, ethical issues are crucial. The study guarantees adherence to YouTube's data usage regulations and terms of service when obtaining and retrieving information via the YouTube Data API. Furthermore, user confidentiality and privacy are protected, and steps are taken to aggregate or anonymize data to safeguard commenters' identities.

4. Limitations:

The research design and data collection procedure may be impacted by several limitations. These include possible biases in the YouTube video selection process, restrictions on the YouTube Data API's ability to retrieve extensive comment data, and difficulties correctly classifying emojis and sentiments. Furthermore, the study's cross-sectional design makes it more difficult to prove a link between engagement measures and emoji usage. Notwithstanding these drawbacks, the goal of the research design is to offer insightful information about how emojis influence user interactions and engagement on YouTube.

Analysis

Emoji Frequency Analysis:

- The collection includes 909 distinct emojis that were taken from user comments from the YouTube video that Mr. Beast had put up on the platform.
- Among all emojis, the red heart emoji is the most used, appearing 15,512 times.
- The face with tears of joy emoji comes in second with 7,270 occurrences.
- These results show that users commonly utilize emojis to express happy feelings and reactions in their comments.

Statistical Significance Analysis:

- Of the 909 emojis examined, only two show statistically significant relationships with the quantity of likes that comments receive.
- The rolling on the floor laughing emoji shows a substantial link with comment likes, with a significant p-value of 0.009998161.
- The face with tears of joy emoji also has a strong correlation with comment likes, as evidenced by its considerable Pearson's correlation coefficient (p-value of 0.00020069).
- On the other hand, 907 out of 909 emojis have p-values over 0.05, indicating that there is no statistically significant association between them and the number of likes on comments.
- These noteworthy results demonstrate the distinctive influence of specific emojis on user engagement and imply their possible significance in evoking favorable responses from viewers.

Sentiment Analysis:

Positive Sentiment

Emojis like "smiling face with smiling eyes", "red heart", "blue heart", "kissing cat face", "smiling face with halo", "sparkling heart", "smiling face with heart-eyes", "heart suit", "green heart", "yellow heart", "beaming face with smiling eyes", "smiling face", "relieved face", "growing heart", "heart with arrow", "heart with ribbon", "smiling face <ef><b8><8f>", "heart suit <ef><b8><8f>", "grinning cat face with smiling eyes", "grinning squinting face", "grinning face", "face savoring food", "winking face", "face blowing a kiss", "astonished face", "smiling cat face with heart-eyes", "beating heart", "two hearts", "revolving hearts", "sun with face", "wolf face", "frog face", "new moon face", and "dragon face" have positive sentiments ranging from 0.0132 to 0.4404.

Negative Sentiment

Emojis like "loudly crying face", "pouting face", "sad but relieved face", "broken heart", "smiling face with horns", "disappointed face", "sleepy face", "face with steam from nose", "angry face with horns", "unamused face", "angry face", "crying cat face", "frowning face <ef><b8><8f>", "confused face", "pouting cat face", "face with medical mask", "worried face", and "heavy heart exclamation" have negative sentiments ranging from -0.1019 to -0.0008.

Neutral Sentiment

Emojis which showed a mean sentiment of close to zero include the following: "crying face", "face with tears of joy", "face with open mouth", "frowning face with open mouth", "sad but relieved face", "weary cat face", "flushed face", "face screaming in fear", "pensive face", "hushed face", "neutral face", "weary

face", "grimacing face", "expressionless face", "dizzy face", "confounded face", "worried face", "kissing face", "panda face", "dog face", "horse face", "tiger face", "bear face", and "monkey face".

Significant Results

Given that they elicit strong emotional reactions, emojis with extreme sentiment scores—that is, very positive or very negative—may be deemed noteworthy. For instance, "angry face with horns" has a noticeably negative emotion of -0.1019, yet "frog face" has an extremely high positive sentiment of 0.4404. These strong feelings might point to emojis that are especially divisive or powerful in communication.

Sample Size and Total Cases

The sample size for analysis is 182,545, which is the total number of cases, or comments, in the dataset. This is a big and thorough account of a sample size for a project of this caliber. Robust statistical analyses are made possible by the large sample size, which also improves the findings' generalizability and dependability. An extensive summary of user interactions and engagement with the YouTube video can be seen in the numerous comments of this particular video.

Write-up

Title: Exploring the Impact of Emoji Usage on User Engagement in YouTube Comments

Introduction: Emojis are widely used in digital communication platforms, which has revolutionized the way people express their feelings and communicate online. One of the biggest platforms for sharing videos, YouTube offers a rich environment for emoji-driven interactions between users and content creators. The purpose of this study is to examine the relationship between the amount of emojis used in user comments on YouTube videos and the quantity of likes those comments receive. This study investigates the impact of emojis on user engagement metrics and clarifies the importance of particular emojis in evoking favorable responses from viewers by examining a dataset taken from a well-known YouTube video by Mr. Beast.

Emoji Frequency Analysis: Emoji frequency analysis of the dataset shows interesting trends in user communication. With an astounding 15,512 instances, the red heart emoji is the most used of the 909 distinct emojis that have been found. This implies that there is a general tendency among users to employ this well-known emoji to convey gratitude and compassion. The emoji 'face with tears of joy' comes in second, with 7,270 occurrences, demonstrating how popular it is for expressing happiness and delight. These results highlight how important emojis are as essential elements of online communication, promoting emotional bonds and exchanges among YouTube users.

Statistical Significance Analysis: Some interesting conclusions emerge from examining the statistical significance of emojis for the number of likes received by comments. Out of the 909 emojis that were looked at, only two have statistically significant correlations with comment likes. The significant p-value of 0.009998161 indicates a strong association between the rolling on the floor laughing emoji and engagement metric of likes. Likewise, the 'face with tears of joy' emoji exhibits a significant Pearson correlation coefficient (p-value of 0.00020069), suggesting that it impacts the positive emotions of the audience. These remarkable findings demonstrate the unique ability of several emojis to boost user engagement and emphasize their importance in encouraging constructive conversations on YouTube.

Sentiment Analysis: Sentiment analysis was done in addition to examining the relationship between emoji usage and user engagement metrics to better understand the subtle emotional messages that various emoticons in YouTube comments convey. Different emojis generated different responses, some of which were primarily favorable and others of which were negative or neutral, according to the sentiment analysis. Emojis that convey positive emotions, such "smiling face with smiling eyes" and "heart suit," are linked to positive feelings. They represent expressions of joy, love, and gratitude. Emojis that represented unpleasant feelings, on the other hand, such as "loudly crying face" and "angry face with horns," were used to express rage, impatience, and despair. Knowing how emojis express emotion can help one better understand the emotional dynamics of online communication as well as how they affect user interaction and engagement.

Sample Size and Total Cases: With 189,595 comments, a sizable sample size, the dataset offers a thorough picture of user interactions and engagement with the YouTube video. Because of the high sample size, the results are more reliable and generalizable, allowing for thorough statistical analysis and insightful understanding of emoji usage trends. The overwhelming number of comments highlights how important emojis are as building blocks for online communication, influencing user interactions, and encouraging community involvement on YouTube.

Conclusion:

The research's conclusions offer insightful information on how emoji usage affects user participation in YouTube comments. Several important findings about the influence of emojis on user interactions within the YouTube community have been established through the examination of emoji frequency, statistical significance, and sample size. The popularity of some emojis—like the face with tears of joy and the red heart—indicates how widely used they are as a common way to convey feelings and emotions in online communication. The discovery of particular emojis—like the rolling on the floor laughing and the face with tears of joy —that have statistically significant associations with comment likes highlights their special power to generate positive responses from viewers.

Furthermore, the large sample size of comments examined in this research enhances the validity and applicability of the conclusions, offering a thorough picture of user interactions and engagement dynamics on YouTube.

Acceptance or Rejection of the Null Hypothesis

After a careful examination of the data, it was shown that there is a positive correlation between the quantity of emojis users include in their comments on YouTube videos and the amount of likes those comments obtain. Two emojis, with p-values less than 0.05, from the 909 emojis examined, had statistically significant positive relationships with the number of likes. The fact that more people have liked comments with these emojis suggests that these emojis are linked to higher levels of user interaction. We also see certain emojis evoking a positive and negative sentiment in the minds of users who participated in the experiment through commenting on the video. This further consolidates the statement that there is a positive correlation between the number and variety of emojis and the amount of likes that those comments with emojis gain.

We therefore accept the null hypothesis, which asserts a positive link between the number of likes in YouTube comments and the usage of emojis, based on the data that has been presented. These findings highlight the significant role of emojis in fostering user engagement and facilitating positive interactions within the YouTube community.

In the future, researchers, platform moderators, and content producers should think about how these findings may be used to better understand and take advantage of the ways that emojis affect the dynamics of user interaction on online communication platforms. This study opens the door for more investigation and analysis in this developing field of research by providing a deeper understanding of the impact of emojis on user interactions and engagement metrics in digital settings.

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Appendix

The R code used for extracting user comments from the Mr. Beast video on YouTube is as follows:

```
library(tuber)
yt_oauth(app_id = 'ENTER API ID HERE',
     app_secret = 'ENTER API SECRET KEY HERE')
```

```
get_stats(video_id = "l-nMKJ5J3Uc")
comments = get_all_comments(video_id = "l-nMKJ5J3Uc")

library(tidyr); library(dplyr)
emoji_labeled =
  comments |>
  emoji_extract_unnest(textOriginal)|>
  mutate(emoji_name = replace_emoji(.emoji_unicode))|>
  select(-.emoji_unicode)|>
  pivot_wider(names_from = emoji_name,values_from = .emoji_count,values_fill = 0)
library(tibble)
data =
  comments |>
  rownames_to_column(var = 'row_number')|>
  select(row_number,textOriginal,likeCount, publishedAt)|>
  mutate(row_number = as.integer(row_number))|>
  left_join(emoji_labeled,by = c('row_number' = 'row_number'))
write.csv(x = data, file = 'emoji_data.csv')
```