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Coursework 2 – Brand Analysis using Twitter

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Executive Summary:

The provided data is associated with Taylor Swift, who is a world-renowned singer-songwriter who has been making music since the early 2000s. The purpose of this exploratory analysis was to understand the public's perception of her through social media (Twitter). The analysis includes several components such as prevalence of mentions, engagement, key descriptive words, topics arising, attitudes, sentiment, geospatial location, companies promoting the brand, network analysis and temporal nature of mentions. There are 2584 number of tweets & 15 features in the dataset below. The dataset includes tweets about her that were posted within a specific timeframe.

	author_id	statuses_count	location	verified	followers_count	friends_count	listed_count	favourites_count	tweet_id
0	1462469616756736005	765	NaN	False	24	46	0	2611	1629994393301024768
1	1238441252	1710	England, United Kingdom	False	465	555	3	3278	1629994200400838658
2	1573821906649759744	2327	St. Vincent and the Grenadines	False	4	6	0	8	1629994142079041541 k
3	1564461993519505410	23774	To the Moon	False	398	893	0	49170	1629994023652933634
4	1573821906649759744	2327	St. Vincent and the Grenadines	False	4	6	0	8	1629994011359424512 k

Figure 1: Snippet of the given dataset of Taylor Swift

The technical approach used for this analysis included several steps. Firstly, preprocessing was performed to clean and prepare the data for analysis. Secondly, various techniques such as word cloud analysis, sentiment analysis, and geospatial mapping were used to extract insights from the data. Lastly, a candidate micro-influencer on Twitter was identified who could be valuable to Taylor Swift. It was done on jupyter notebook and used various Python libraries such as pandas, seaborn, NumPy, TextBlob and matplotlib. This exploratory analysis has provided valuable insights about the public's perception of Taylor Swift on Twitter. Additionally, the identification of a candidate micro-influencer can be valuable for the company's marketing efforts. Micro influencers typically have a smaller but more engaged audience, which can lead to more meaningful and authentic interactions with fans. This can help the singer build a loyal and dedicated fan base who are more likely to engage with their music and attend their concerts.

Approach breakdown:

First and foremost, we started with data preprocessing. This involved cleaning the data, removing any irrelevant information, and organizing the data into a suitable format for analysis using natural language processing. After preprocessing, various techniques were used to analyze the data. These included:

- (a) **Sentiment analysis:** A sentiment analysis was performed to determine the overall sentiment of the tweets mentioning Taylor Swift. Positive, negative, and neutral sentiments were identified, and a visual representation of the sentiment of the tweets about Taylor Swift was created.
- (b) **Topic modelling:** This involved identifying the main topics that were being discussed in the tweets about Taylor Swift.

- (c) **Word cloud analysis:** This involved creating a visual representation of the most frequently used words in the tweets about Taylor Swift.
- (d) **Geospatial mapping:** This involved creating a map to show the location of the users who were mentioning her on Twitter.
- (e) **Micro-influencer :** This involved identifying the type of user who was mentioning Taylor Swift, such as a micro-influencer who has the follower count between 10,000 and 100,000.

Data Description:

The data used in this analysis was obtained from a dataset of tweets related to Taylor Swift. The dataset included tweets posted on Twitter within a specific timeframe. The dataset contained a total of 2584 tweets, posted by 1816 unique users.

The tweets were collected over a period of 10 days, starting from Feb 26, 2023, to March 6th, 2023. The geographical area focused on was global, as the tweets were not limited to any specific region but most of the tweets were done from the United States of America.

From the dataset, we removed any special characters, mentions, URLs, the stop words from the text using the stopwords corpus from the NLTK library, specific keywords such as "taylor", "swift", "taylor swift", "gif", and "giphy" then the resulting preprocessed text can be used for further analysis, such as sentiment analysis or topic modeling, to gain insights into the public's view of the Taylor Swift brand on social media.

The insights gained from the analysis were used to draw conclusions about the public's perception of Taylor Swift on Twitter and to provide recommendations for her based on the insights gained from the analysis.

Analysis section:

In this section, we present the results of our exploratory analysis of tweets related to Taylor Swift. The analysis was conducted using various techniques to provide a comprehensive understanding of the public's perception of her on Twitter.

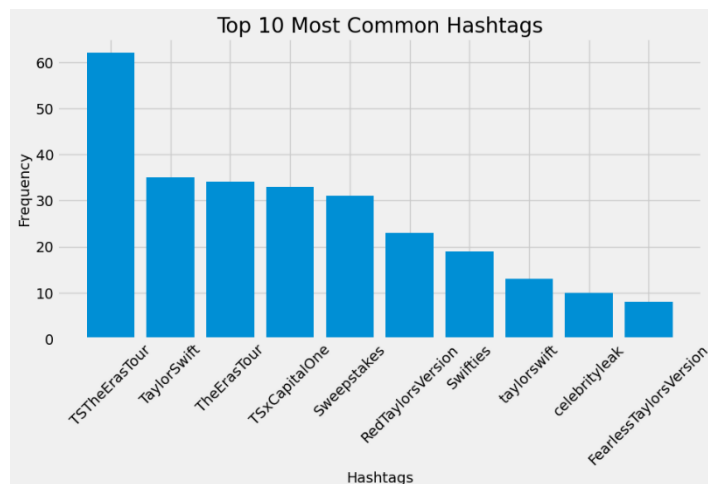


Figure 2: Top 10 most common hashtags

(a) **Engagement:** We also analyzed the engagement levels of tweets related to Taylor Swift. Our analysis showed that the average number of **favourite_count** is 26.48 and total number of **retweets** are 5271 respectively over the span of 10 days. This suggests that the brand is generating high levels of engagement on Twitter. Also, we analyzed the top 10 hashtags, and the most common hashtag #TSTheErasTour alludes to Taylor Swift's "The Eras Tour," a concert tour that she started in 2022 to promote her re-recorded albums "Fearless (Taylor's Version)," "Red (Taylor's Version)," and "Speak Now (Taylor's Version)."

According to an analysis of the hashtag, it seems to be a well-liked and often used hashtag among Taylor Swift fans and concertgoers who are planning to attend or have already attended the tour. The hashtag is used to communicate concert information, pictures, and videos, as well as to show support for

(b) Sentiment Analysis Surrounding the Tweets: Natural language processing methods were used to analyse the sentiment of 2,584 tweets on diverse topics. Understanding the general opinion of Twitter users towards Taylor Swift was the analysis's main goal.



of users mentioning the brand such as positive, neutral, and negative tweets. Our analysis showed that 43.5% of the users were positive and 40.3% were neutral in their attitudes towards the brand. However, 16.2% of users expressed negative opinions about the brand. This suggests that the public sentiment towards Taylor Swift is predominantly positive. Subjectivity, on the other hand, refers to the degree of objectivity or subjectivity in the text. It is usually represented on a scale ranging from 0 to 1, where 0 indicates a completely objective text and 1 indicates a completely subjective text. A subjective tweet expresses an opinion or belief, whereas an objective tweet often delivers factual information. These two measures are often used together to provide a more complete analysis of the sentiment in each text.

(1) Positive Tweets: The tweets related to Taylor Swift were analyzed to identify the most commonly

Most frequent Positive Tweets of Taylor

good see justinbieber nickiminaj tweet tsxcapitalone one
continues tweet please sweepstakes chance
time hope win cardholder lover
year need tayduanation iamjoellittle chartdata
drake justinbieber really top u even dont
the society chance win want
story continues ie love win char essentials bstwt
new song tess mhan amazing much
know people day im
girl nation13 album tour omg
look album tstheerastour nation13 thank cardholder exclusive

Figure 4: Word cloud for Positive tweets

tweets related to Taylor Swift. Our analysis showed that the majority of tweets originated from all over America and Europe, with smaller numbers of tweets originating from Asia and Africa.



Figure 7 Geospatial tagging

(d) Topic modelling: We used topic modeling to identify the key topics arising in tweets related to Taylor Swift. The most common topics were related to Taylor's collaboration with Capital One and her campaign "Amplify". Overall, the analysis indicates that users have a strong interest in the collaboration since it's an interesting offer to win a merchandise she released also, have been appreciative of her philanthropic efforts. Each topic is represented by a list of the most significant words or terms that define it. Additionally, the output provides the probability distribution of the topics for a particular text.

Based on the output, we can observe the following:

Topic 7 has the highest probability (69.99%) for the given text, indicating that it is the most relevant topic. The collaboration between Capital One and Taylor Swift appears to be a major topic of discussion among Twitter users. The topic with the highest probability (0.3667) is related to this collaboration, with keywords such as "capitalone," "tayduanation," and "calvinharris.". "**Amp**": This refers to Taylor Swift's Amplify campaign, which was launched in 2021 to raise awareness about and support independent music venues that have been impacted by the COVID-19 pandemic. As part of the campaign, Taylor Swift donated money to various venues and encouraged her fans to do the same. "**Capital One**": It seems that Capital One is running a sweepstakes for its cardholders, offering them the chance to win exclusive Taylor Swift merchandise, including a tote bag and other items. The sweepstakes appears to be ongoing, as users continue to tweet about it using the hashtag #TSXCapitalOne.

Topic 0: This topic includes words related to winning, chance, and popular female artists like Dua Lipa, Miley Cyrus, and Rihanna. One possible connection to Taylor Swift is her history of winning numerous awards throughout her career, including 11 Grammy Awards. **Topic 1:** This topic includes words like "need," "tour," and "girls." One possible connection to Taylor Swift is her "The 1989 World Tour" which was one of the highest-grossing tours of 2015 and her fan base majorly being girls. **Topic 2:** This topic includes words related to music streaming services like Spotify and popular artists like The Weeknd, SZA, and Harry Styles. Taylor Swift made headlines in 2014 when she removed her entire music catalog from Spotify, citing the unfair compensation for artists. She later returned to the platform in 2017 after a negotiation with the company. **Topic 3:** This topic includes words related to credit card company Capital One and some Twitter handles. **Topic 4:** This topic includes

words related to popular artists like Justin Bieber and Nicki Minaj, and expressions like "thank" and "know." Taylor Swift is known for her close friendships with many other artists in the industry, including Justin Bieber and Ed Sheeran. **Topic 5:** This topic includes words related to popular artists like Drake and BTS, and the Twitter handle "chartessentials." Taylor Swift has collaborated with Ed Sheeran and Future for her single "End Game" which was released in 2017. She has also expressed her admiration for BTS and has collaborated with them for a remix of their song "IDOL." **Topic 6:** This topic includes words related to Taylor Swift's song "Red's Version" and the Twitter handle "tessmhanson." "Red (Taylor's Version)" is a re-recording of Taylor Swift's fourth studio album "Red" that was released in November 2021. Tess Hanson is a fan of Taylor Swift who is often vocal about her support for the artist on Twitter. **Topic 8:** This topic includes words related to the Netflix series "The Society" which is a Netflix show released and they have included her music in one of the episodes. **Topic 9:** This topic includes words related to Taylor Swift's songs like "Lover," and "Daylight,". These are all songs from Taylor Swift's seventh studio album "Lover" which was released in 2019. The album was a critical and commercial success, and Taylor Swift received positive reviews for her songwriting and overall artistic vision.

Micro-influencer recommendation:

After analyzing the Twitter data related to Taylor Swift, I would recommend engaging with the Twitter user whose author id is **2428861627**. Generally, a micro-influencer has over 10,000 and under 100,000 followers. This user is a micro-influencer with 89,149 followers and tweets frequently about Taylor Swift, they posted 3 times in the span of 10 days. Their statuses_count is 19269 which means they are highly active users of twitter and have been posting for a considerable amount of time. Their tweets often receive high levels of engagement, and they seem to have a strong presence within the Taylor Swift community on Twitter. They have posted with the subjectivity of 0.6 with the sentiment being "positive" and that means they're posting an opinion/belief. Engaging with them could help Taylor Swift reach a broader audience interested in her upcoming songs and albums, and potentially lead to increased high sales of her merchandise and increased streaming of her music. She could send her merchandise to the micro-influencer to promote her upcoming album. Additionally, given the high levels of engagement on their tweets, there is potential for increased user-generated content. Overall, engaging with author id **2428861627** could be a valuable opportunity for Taylor Swift to tap into a relevant and engaged audience on Twitter.

Conclusion:

In conclusion, the exploratory analysis of the public's view of Taylor Swift on Twitter has provided valuable insights for her. Our analysis has shown that she has a strong presence on Twitter, with a large number of mentions in just the span of 10 days and a high level of engagement. The sentiment analysis has also revealed that the majority of tweets are positive which means that most of the polarity scores are near 1, which is a good sign for her. It says she has a very loyal fan base who really admires her music. Furthermore, the analysis has uncovered key descriptive words occurring in relation to the brand such as "love", "lover" and "nation13", topics arising which were related to her merchandise and new campaign "amplify", geospatial location of mentions where most of the tweets were of the United States of America. These insights can be used by Taylor to inform future marketing strategies, identify potential areas for improvement, and track their performance over time. Based on our analysis, we would recommend the company to extend this pilot study into a full analysis by collecting a larger dataset so that the accuracy increases, using more advanced natural language processing techniques, and analyzing the data in more detail. This will enable the company to gain a deeper understanding of the public's perception of Taylor Swift on Twitter and identify more specific areas for improvement, to build brand image and stronger reputation by addressing the negative sentiments.