

# TDS 3751

## Social Media Computing

### Assignment Part 1

#### Dashboard

#### GROUP 6

BY

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## Data

The data used for this analysis was collected using the APIFY API, specifically for Twitter. The data collection was performed on May 21, 2023, and a total of 50 tweets were collected for each brand. These tweet's data include various attributes such as tweet text, user information, view count, favourite count, reply count, retweet count, hashtags, URLs, and media types.

## Data Pre-processing

The data pre-processing phase was performed using Python programming language. Libraries such as Seaborn and Matplotlib were utilized for data visualization and chart plotting. These libraries provide a wide range of tools and functionalities to analyze and present the data in a visually appealing manner.

## Dashboards

The analysis results are presented in a dashboard format, providing an organised and comprehensive data view. The dashboard includes several sections, each focusing on a specific aspect of the data:

1. **Number of Views for Each Tweet (Bar chart):** This chart illustrates the trend of views for each tweet over each tweet. It helps to identify tweets that gained more visibility and engagement.
2. **Number of Favorites for Each Tweet (Bar chart):** This chart depicts the number of favourites received by each tweet. It allows us to observe which tweets were liked the most by the audience.
3. **Number of Replies for Each Tweet (Bar chart):** This chart displays the number of replies received by each tweet. It helps to identify the level of engagement and interaction generated by the tweets.
4. **Number of Retweets for Each Tweet (Bar chart):** This chart shows the number of retweets received by each tweet. It highlights the tweets that were shared extensively by the users.
5. **Frequency of Each Hashtag (Bar Chart):** This bar chart presents the frequency of each hashtag used in the collected tweets. It helps to identify popular hashtags and topics of discussion.
6. **Frequency of Each URL mentioned (Bar Chart):** This bar chart showcases the frequency of URLs mentioned in the tweets. It provides insights into the external content shared and referenced by the users.
7. **Daily Tweet Activities (Line Chart):** This line chart presents the daily tweet activities, showing the number of tweets posted each day. It helps to identify any trends or patterns in tweeting behaviour.
8. **Distribution of Media Types (Pie Chart):** This pie chart illustrates the distribution of media types (images, videos, and links) used in the tweets. It provides an overview of the content formats shared by the brands.
9. **Word Cloud:** The word cloud visually represents the most frequently used words in the tweet text and user descriptions. It gives a quick snapshot of the popular terms and themes associated with the tweets.

These dashboards provide a comprehensive analysis of Twitter data, enabling users to gain insights into brand performance, engagement levels, and content trends.

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The "Number of Views for Each Tweet" bar chart reveals that the highest number of views received for a single tweet is 195,615. On average, the posts maintain a range of 40,000 to 70,000 views, indicating a consistent level of visibility and engagement.

The "Number of Replies for Each Tweet" bar chart indicates that the highest number of replies per tweet is 83. Typically, the tweets generate around 10 to 30 replies, indicating a moderate level of engagement and interaction.

The "Number of Retweets for Each Tweet" bar chart reveals that the highest number of retweets for a tweet is 374. On average, the posts garner around 30 to 100 retweets, highlighting the extent to which the content is shared by users.

Analyzing the "Frequency of Each Hashtag" bar chart, it becomes apparent that Mercedes-Benz employs hashtags quite extensively in their tweets. The most frequently used hashtag is #MercedesBenz, which appears in 35 of the collected tweets. This suggests a deliberate effort to engage with specific topics and discussions.

Examining the "Frequency of Each URL mentioned" bar chart, it is notable that the URL "http://mb4.me/e-class214" is mentioned the most, with a total frequency of 5 occurrences across the 50 posts. In total, 26 different URLs were mentioned in the collected tweets, highlighting the brand's inclination to share and reference external content.

The "Daily Tweet Activities" line chart depicts the number of tweets posted each day. The highest activity observed was on May 4th, 2023, with 5 tweets posted in a single day. This chart allows us to identify any notable trends or patterns in the brand's tweeting behaviour.

The "Distribution of Media Types" pie chart offers insights into the media types (images, videos, and links) used in the tweets. The most commonly used media type is photos, accounting for 48% of the posts (24 tweets). No media (text-only) makes up 38% (19 tweets), and videos represent 14% (7 tweets). This distribution provides an overview of the content formats preferred by the brand.

Finally, the word cloud visually represents the most frequently used words in the tweet text and user descriptions. The topmost used words include "https," "t.co," "Mercedes Benz," "official Twitter," and "Benz Welcome." This word cloud offers a quick snapshot of the popular terms and themes associated with the brand's tweets.

In summary, the dashboard analysis of Mercedes-Benz's Twitter page showcases the brand's significant following, consistent visibility, and engagement. The brand effectively utilizes hashtags, shares various URLs, and employs different media types in its tweets. The word cloud highlights the recurring terms and themes in the content, providing valuable insights into the brand's messaging and online presence.

## Brand 2: Lamborghini



The dashboard provides an overview of the Lamborghini dataset retrieved from their Twitter account. It includes various visualizations and metrics to analyze the performance and engagement of their tweets. The vertical bar chart showcasing the number of views for each tweet helps identify the tweets that gained the most visibility and engagement. The tweet at the 48th index received the highest number of views, reaching 108,095, while the lowest number of views was recorded for the 38th tweet index at 20,802.

Moreover, the vertical bar chart displaying the number of favourites for each tweet allows us to observe which tweets were liked the most by the audience. The tweet at the 48th index received the highest number of favourites, with 2,037 likes, whereas the 10th tweet index had the lowest favourite count, with only 88 likes. Next, the other vertical bar chart presenting the number of replies for each tweet is useful. The 18th tweet index received the highest number of replies, totalling 66, while both the 10th and 22nd tweet indices had only one reply each. In addition, the fourth vertical bar chart displayed the number of retweets for each tweet highlighting the tweets that were extensively shared by users. The 27th tweet index received the highest number of retweets, reaching 66, while the 10th tweet index had a relatively low number of retweets, with only five.

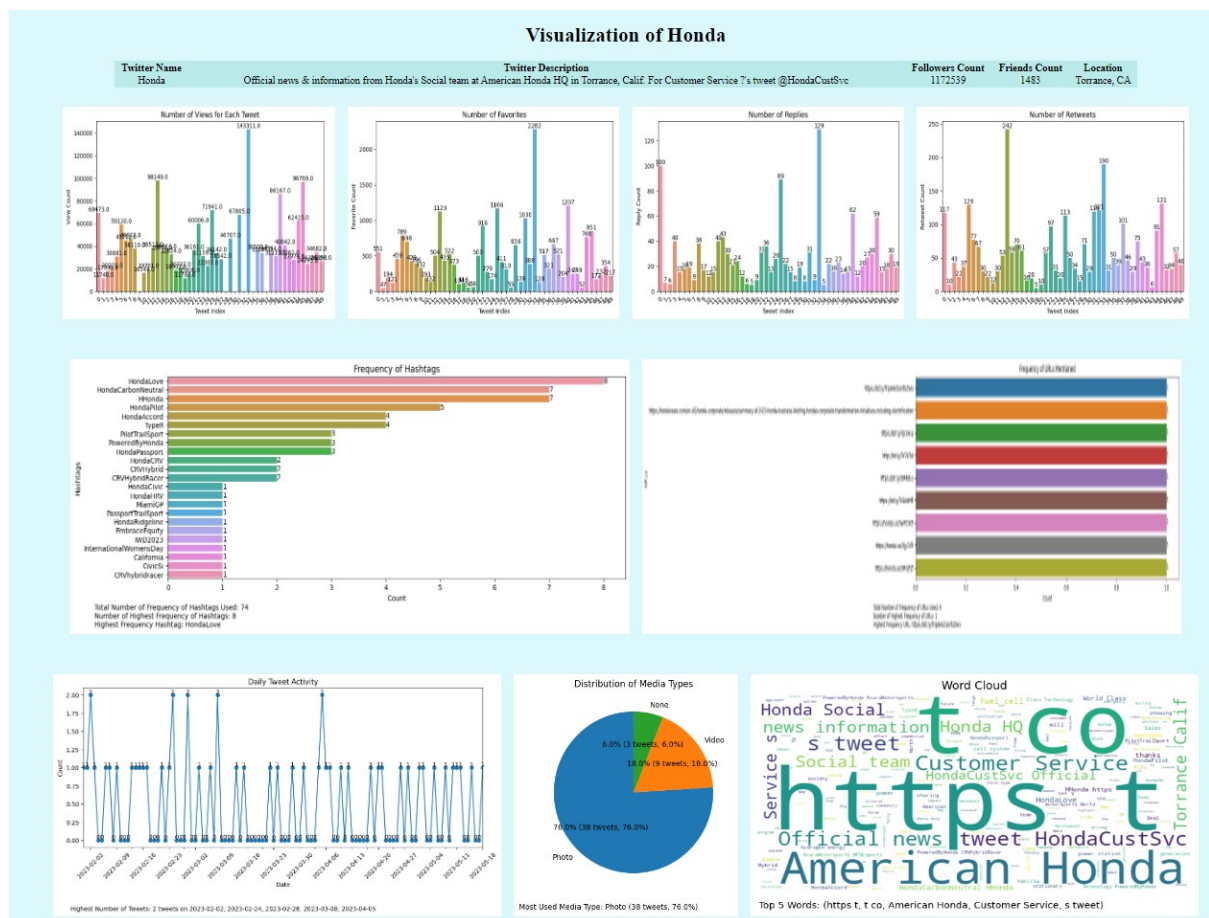
Furthermore, the horizontal bar chart helps identify popular hashtags and topics of discussion by analyzing the frequency of each hashtag used in the tweets,. The most frequently used hashtag was "Lamborghini" with a frequency count of 41, indicating its prominence in the conversations. Several other hashtags were used only once, indicating less popularity. Examining the frequency of URLs mentioned in the tweets, the horizontal bar chart provides

insights into the external content shared and referenced. The URL named [http://lam.bo/CE\\_tw](http://lam.bo/CE_tw) appears with the highest frequency of 33 times.

Additionally, the line chart of daily tweet activity tracks the number of tweets posted each day, revealing trends or patterns in tweeting behaviour over time. The chart you provided shows fluctuations in the number of tweets per day, ranging from 0 to 3. As you can see from the dashboard, there were three tweets posted on 2023-04-19, 2023-04-21, 2023-05-03, 2023-05-11, 2023-05-12 and 2023-05-16, while no tweets were posted on couple dates such as 2023-04-15, 2023-04-16 and more. Further, the pie chart presents the distribution of media types used in the tweets. The majority of the tweets (98%) did not include any media, while only one tweet (2%) included a photo. Finally, the word cloud visually represents the most frequently used words in the tweet text and user descriptions. The top five words in the cloud were "Driving Humans," "Humans Beyond," "Lamborghini Driving," "Automobili Lamborghini," and "Beyond Brave," reflecting the recurring themes and popular terms associated with the Lamborghini tweets.

Overall, the dashboard provides a comprehensive and detailed analysis of Lamborghini's Twitter account, examining metrics such as engagement levels, popular hashtags, media types, tweeting behaviour, and recurring themes, enabling a better understanding of the brand's social media performance.

### Brand 3: Honda



The figure above depicts the visualization dashboard of Honda. The data is collected from Honda's Twitter account which serves as the official source for news and information from Honda's Social team, based at the American Honda headquarters in Torrance, California. This Honda's Twitter account has amassed a significant following, with over 1.1 million followers. This account follows a relatively small number of accounts, with 1483 friends.

Based on the "Number of Views for Each Tweet" bar chart in the dashboard, the view count shows a significant spike number of 143311 at the 33rd tweet index. This suggests that this tweet has a much higher level of engagement or exposure than the other tweets in the data. The lowest number of views, 11740, is observed at the 1st tweet index.

The bar chart of "Number of Favorites for Each Tweet" provides insights into the popularity and likability of each tweet. In this bar chart, it is evident that the tweet index at 1st has a spike in the number of favourites, with a count of 2282, while the 24th tweet index shows the lowest number of favourites, which is 47. Analyzing the characteristics, content, and context of the highly favoured tweet at the 38th index can provide insights into the factors that resonated well with the audience.

By analyzing the bar chart of "Number of Replies for Each Tweet", there is a significant spike in the number of replies, with a count of 129 at the 33rd tweet index. This indicates that this tweet sparked a substantial amount of discussion, prompting Twitter users to actively respond

and engage with the content. On the other hand, the lowest number of replies, 5, is observed at both the 19th and 34th tweet indices.

The bar chart of "Number of Retweets for Each Tweet" provides insights into the level of sharing and amplification of each tweet. At the 13th tweet index, there is a significant spike in the number of retweets, with a count of 242. This indicates that the tweet at that position resonated strongly with the Twitter audience, prompting a large number of users to retweet it and share it with their own followers. Conversely, the lowest number of retweets, 5, is observed at the 19th tweet index.

According to the horizontal bar chart of "Frequency of Each Hashtag", a total of 74 different hashtags have been used. Among these 74 hashtags, the highest frequency observed is 8. The hashtag "HondaLove" seems to be popular and has been used more frequently than any other hashtag in the dataset.

Based on the "Frequency of URLs Mentioned" horizontal bar chart, there is a total of 9 different URLs have been mentioned. Among these 9 URLs, the highest frequency observed is 1. This indicates that there is no particular URL that has been mentioned more frequently than any other URL in the dataset. Each URL appears only once in the dataset, and none of them has a higher frequency compared to others. The specific URL mentioned with the highest frequency is "<https://bit.ly/TripleActionToZero>". While it has the highest frequency among the URLs mentioned, it appears only once in the dataset.

By analyzing the line chart representing the "Daily Tweet Activity" of Honda, there are several dates that stand out with the highest number of tweets posted by Honda. On 2023-02-02, 2023-02-24, 2023-02-28, 2023-03-08, and 2023-04-05, Honda posted the highest number of tweets, with a count of 2 tweets on each of those days.

Moreover, the pie chart of "Distribution of Media Types" depicts that the most used media type is photos. Out of 50 tweets analyzed, 38 tweets, which accounted for 76% of the distribution, contain photos. Honda's preference for using photos in their tweets indicates their recognition of the impact visual content can have in engaging their audience and conveying their brand message effectively.

The word cloud of Honda displays the most frequently occurring words in the context of Honda. The top 5 words in the word cloud are "https t", "t co", "American Honda", "Customer Service", and "s tweet". These frequently occurring terms help identify key themes, topics, or areas of focus in Honda's online presence and communication.

In a nutshell, the dashboard analysis of Honda's Twitter page provides a glimpse of the brand's online engagement, content strategy, and areas of focus in its social media presence. Honda's tweets vary in engagement and interaction, with some generating high views, favourites, replies, and retweets. It focuses on engaging its audience, sharing visual content, and addressing customer needs.



## Brand 4: BMW



The fourth dashboard analysis focuses on the Twitter page of BMW. With a total of 2,521,968 followers, it is evident that the brand has a significant presence on the platform. Let's delve into the insights obtained from the various charts and visuals.

The "Number of Views for Each Tweet" bar chart reveals that the highest number of views received for a single tweet is 226,477. On average, the posts maintain a range of 20,000 to 80,000 views, indicating a varying level of visibility and engagement.

The "Number of Favorites for Each Tweet" bar chart showcases that the highest number of favourites for a tweet is 1,708. Generally, the posts receive an average of 80 to 700 favourites, reflecting a positive reception from the audience.

The "Number of Replies for Each Tweet" bar chart indicates that the highest number of replies per tweet is 394. Typically, the tweets generate around 10 to 70 replies, indicating a moderate level of engagement and interaction.

The "Number of Retweets for Each Tweet" bar chart reveals that the highest number of retweets for a tweet is 193. On average, the posts garner around 10 to 90 retweets, highlighting the extent to which the content is shared by users.

Analyzing the "Frequency of Each Hashtag" bar chart, it becomes apparent that BMW also utilizes hashtags extensively in their tweets. The most frequently used hashtag is #BMW, which appears in 23 of the collected tweets. This suggests a deliberate effort to engage with specific topics and discussions.

Examining the "Frequency of Each URL mentioned" bar chart, it is notable that the URL "http://b.mw/Further\_info" is mentioned the most, with a total frequency of 11 occurrences across the 50 posts. In total, 23 different URLs were mentioned in the collected tweets, highlighting the brand's inclination to share and reference external content.

The "Daily Tweet Activities" line chart depicts the number of tweets posted each day. The highest activity observed was on May 19th, 2023, with 14 tweets posted in a single day. This chart allows us to identify any notable trends or patterns in the brand's tweeting behaviour.

The "Distribution of Media Types" pie chart offers insights into the media types (images, videos, and links) used in the tweets. The most commonly used media type is none (text-only), accounting for 46% of the posts (23 tweets). Photos make up 40% (20 tweets), and videos represent 14% (7 tweets). This distribution provides an overview of the content formats preferred by the brand.

Finally, the word cloud visually represents the most frequently used words in the tweet text and user descriptions. The topmost used words include "https," "t.co," "official BMW," "BMW account," and "account Come." This word cloud offers a quick snapshot of the popular terms and themes associated with the brand's tweets.

In summary, the dashboard analysis of BMW's Twitter page showcases the brand's significant following, varying visibility, and engagement levels. BMW Twitter effectively utilizes hashtags, shares various URLs, and employs different media types in its tweets. The word cloud highlights the recurring terms and themes in the content, providing valuable insights into the brand's messaging and online presence.

## Comparison Chart

	BMW	Honda	Lamborghini	Mercedes-Benz
Followers	2,521,968	1,172,539	2,327,086	4,021,106
Number of views for each Tweet (highest)	226,477	143,311	108,095	195,615
Number of favourites for each tweet (highest)	1708	2282	2037	2403
Number of replies for each tweet (highest)	394	129	66	82
Number of retweets for each tweet (highest)	193	242	181	374

Total Frequency of Hashtags Used	98	74	96	101
Frequency of URLs mentioned	23	9	33	26
Tweet Activity	14	2	3	5
Media Type Most Used	None (46%) Photo (40%) Video (14%)	Photo (76%) Video (18%) None (6%)	None (98%) Photo (2%)	Photo (48%) None (38%) Video (14%)

In terms of followers, Mercedes-Benz stands out with the highest number of followers, totalling 4,021,106. This indicates a larger and potentially more engaged audience compared to BMW (2,521,968), Honda (1,172,539), and Lamborghini (2,327,086).

In terms of the number of views for each tweet, BMW takes the lead with the highest number of views at 226,477, followed by Mercedes-Benz with 195,615, Lamborghini with 108,095, and Honda with 143,311. This suggests that BMW's tweets have gained more visibility and engagement in terms of views compared to Mercedes-Benz.

When considering the highest number of favourites for each tweet, Mercedes-Benz again leads with a count of 2,403, showcasing a high level of audience appreciation. BMW (1,708), Honda (2,282), and Lamborghini (2,037) follow closely but do not surpass Mercedes-Benz.

In terms of replies, Mercedes-Benz consistently shows an average engagement level, with a number of replies of 82 falling behind BMW and Honda. In contrast, Mercedes-Benz actually achieves a great job on the number of retweets with the highest number of retweets of 374. This indicates that Mercedes's tweets have been shared more extensively by users compared to the other brands.

Furthermore, Mercedes-Benz maintains a high frequency of hashtag usage, with 101 instances recorded. This suggests that the brand actively participates in relevant discussions and topics on Twitter, surpassing BMW (98), Honda (74), and Lamborghini (96).

In terms of media usage, Mercedes-Benz exhibits a balanced approach, with a distribution of photos, videos, and no media content. BMW and Lamborghini also utilize a combination of photos and video, while Honda primarily relies on photos.

Considering these metrics, it is evident that Mercedes-Benz excels in terms of its strong follower base, high engagement metrics, frequent hashtag usage, and balanced media approach. These factors collectively contribute to the brand's superiority and indicate a strong social media presence compared to BMW, Honda, and Lamborghini.