BUSI4370
ANALYTICS SPECIALIZATIONS AND APPLICATIONS
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1. EXECUTIVE SUMMARY

This document outlines an exploratory review of the public's perception of Nike from the perspective of social media (Twitter). The aim was to provide a snapshot of the brand's relationship with people on social media, including the prevalence of mentions, engagement, key descriptive words, sentiment analysis, and the temporal nature of mentions. The dataset used for analysis comprises 3,000 tweets adding valuable information such as author ID, location, language, retweet count, hashtags, and favourite count. In this analysis, we utilised Python-based techniques, namely, **sentiment analysis, text analysis, and geospatial analysis**, for a comprehensive technical approach. Using sentiment analysis, we were able to identify the overall sentiment associated with the brand, which was predominantly positive. Text analysis also enabled us to identify the most-used words and phrases related to the brand, providing further insight into how customers feel about it. "**Fashion", "sneakers" and "Jordans**" are some of the most common keywords & phrases about the brand. In this case study, the geospatial analysis helped identify key locations where Nike was mentioned the most, including the United States, the United Kingdom, and Europe.

2. APPROACH BREAKDOWN

Exploratory Data Analysis is extremely valuable for the analysis of the Nike brand. This allowed us to gain a greater understanding of the data, discover patterns and trends, and use these to create meaningful insights. The following steps were performed during the process:

I. **Data Cleaning**: The initial phase of any data analysis involves cleansing the data, which entails locating blank spots, copies, and inconsistencies within the dataset. For our Nike product evaluation, we formatted the text to remove all mentions, URLs, and punctuation to ensure ease of comprehension.

II. **Descriptive Statistics**: After the data were pre-processed, we computed basic descriptive statistics to gain insight into the distribution of parameters, such as tweet volume, retweets, and favourites. We gathered information regarding user engagement, which aided in our choice of visualisation.

III. **Text Analysis**: We utilised multiple text analysis techniques, namely word frequency and sentiment analysis, to effectively comprehend text data. This enabled us to pinpoint the terms associated with the Nike brand and gauge the general sentiment of the tweets.

IV. **Visualization**: Visual aids, such as bar charts, word clouds, and geographic maps, are very useful in understanding complex datasets. We used these visualisation techniques to generate insights from our data, identify trends, and predict future outcomes.

V. **Micro-Influencer Identification**: After assessment of metrics such as followers, engagement rate, and how it relates to the Nike brand, we identified a micro-influencer that could be an ideal match for the company.

By leveraging these steps, we were able to gain a better understanding of how people interact with the Nike brand on Twitter. This helped us understand consumer behaviour, enabling us to make smarter decisions and deliver better results.

3. DATA DESCRIPTION SECTION

Nike has certainly affected the social media world. According to the analysis of 3000 tweets, most tweets discussing Nike were seen between **February 22 and 23, 2023** (Figure 1) and came from **New York, NY** (667) (Figure 2). This demonstrates how powerful the Nike brand is, inspiring conversations across the globe. The findings of this analysis could be useful to marketing professionals seeking to understand consumer trends. Nike is one of the leading brands in the world and its social media presence is no exception. The analysis of their Twitter engagement also shows that on average, each tweet has **2.29 engagements** (Figure 3), with **7.40% of tweets having high engagement** rates above the mean. This demonstrates how effectively Nike used Twitter to engage with its audience and promote its brand. Fortunately, sentiment analysis provides invaluable insight into public opinion by measuring the sentiments of tweets

related to a brand. This snapshot analysis of Nike's sentiment score on Twitter reveals a **positive view** of the company **at 0.40**, indicating that they have a good starting point for understanding their public image.

4. ANALYSIS SECTION

This analysis seeks to uncover the prevalence of mentions of the Nike brand on Twitter, with a focus on the location and time of the tweets. The purpose is to understand how Nike's brand is perceived geographically as well as over time.

4.1 Prevalence of Mentions

The analysis of mentions of Nike products revealed that the highest concentration of mentions was in New York. Using this information, Nike can create more effective campaigns tailored to their audience in New York and maximise their return on investment.

With major tweets occurring between 22 February and 23, 2023, Nike needed to pay attention to any spikes in social media mentions and respond accordingly.
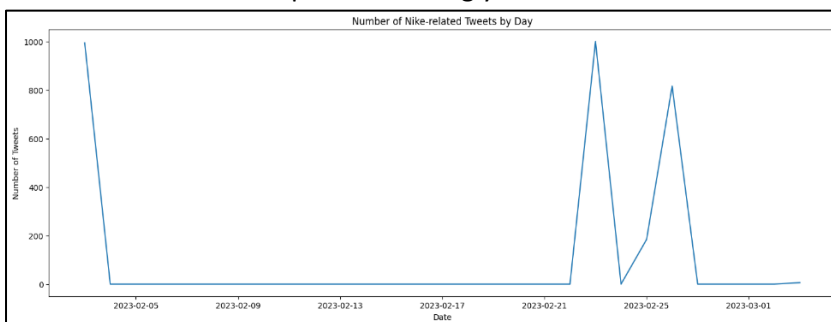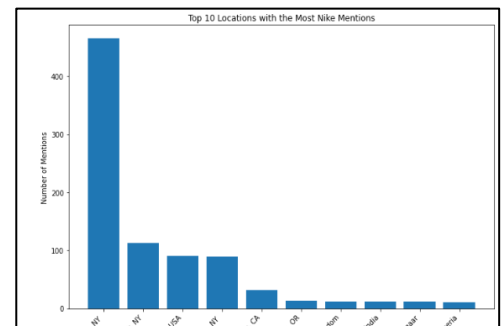

Figure 1: Number of Tweets by Day

Figure 2: Top 10 locations with the most Nike Mentions

4.2 Engagement

When it comes to engagement, the reactions of users to tweets such as retweets, favourites, and replies are critical aspects. Therefore, in this section, we analyse all engagements generated by tweets related to Nike on Twitter.

Analysing the given data, the average number of retweets per tweet was 0.35467 and the corresponding figure for favourites was 1.932. Consequently, the average engagement per tweet comes out as a sum of both retweets and favourites which is 2.29 (Figure 3).

Based on the averages, we can classify tweets as having low, moderate, or high engagement levels. Tweets with low engagement are those that receive less than one retweet or favourite, medium engagement tweets are those that receive between one and three retweets or favourites, and high engagement tweets are those with more than three retweets or favourites.
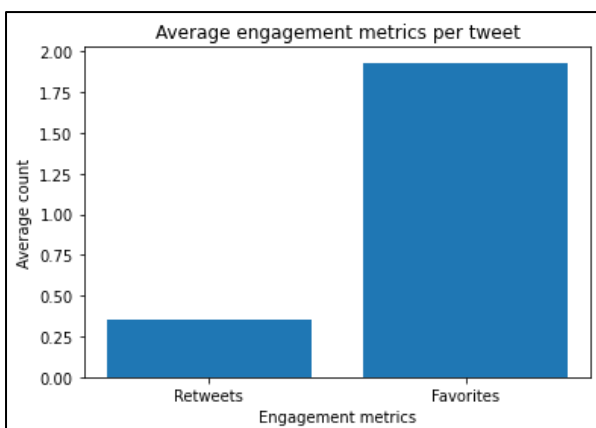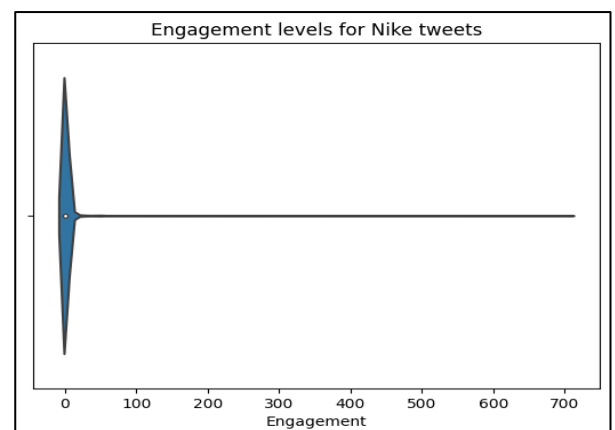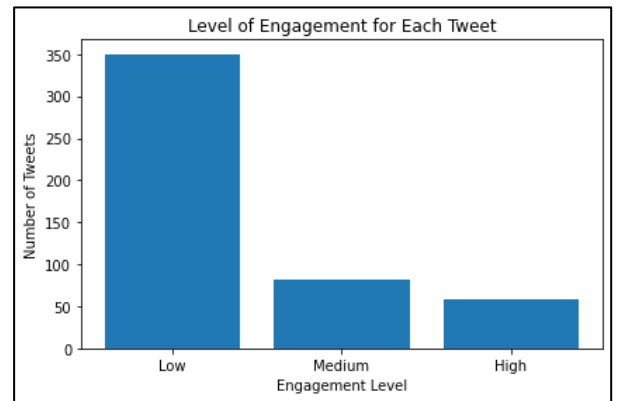

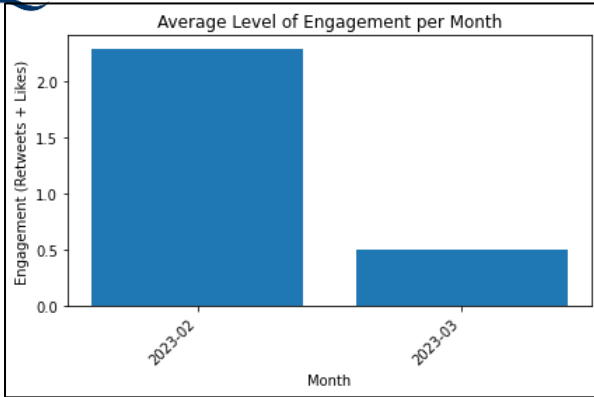*Figure 3: Average Engagement metrics*

Figure 4: Engagement levels for Nike tweets

Figure 5: Average level of Engagement per month

Figure 6: Engagement levels of each Tweet

The analysis of tweets mentioning Nike was concerned with a staggering **95.33% having low engagement**, with only **2.73% and 1.93% having a medium and high engagement**, respectively (Figure 6). Unfortunately, the data suggest that while Nike is often mentioned on Twitter, users are not engaging with the brand's content at high levels. To increase engagement, Nike must find meaningful ways to engage with its audience and create content that resonates with them.
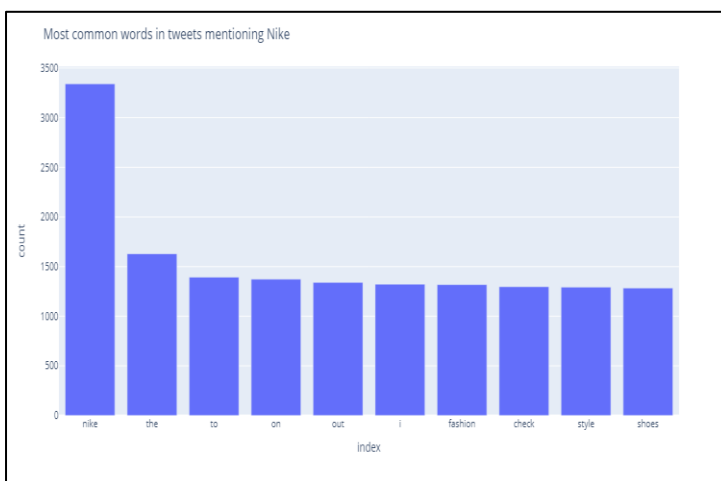
4.3 Key Descriptive Words

After thoroughly studying the words and hashtags used in the tweets related to Nike, we observed the most recurrent terms. This research provides valuable insights into the main topics associated with Nike on Twitter.

Analysis of the given data has revealed that the 10 most frequently used words in tweets mentioning Nike are: "Nike", "the", "to", "on", "our", "i", etc. Similarly, some of the most frequently used hashtags include: "#nike", "#fashion" "#115" -#style and #110". (Figure 7 & Figure 8).

It appears that users primarily look at Nike as a fashion label, with Twitter being the platform they use to discuss their products from that point of view. The conversation seems to be centring around terms like "style", "fashion" and "shoes".

Utilising hashtags such as "Nike" and "fashion" (Figure 9) strongly implies that Nike is effectively utilising social media to boost its brand position as a fashion symbol. Nike can gain insights from this information to comprehend how customers perceive their brand on social media, and later adjust their social media content accordingly.
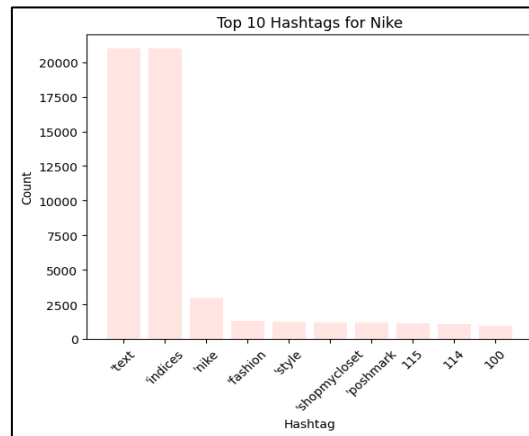

Figure 7: Top 10 words in tweets mentioning Nike

Figure 8: Word Cloud of the words used in the Tweets.

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Figure 9: Top 10 Hashtags for Nike

4.4 Topics Arising

Furthermore, we performed a topic analysis of the tweets, which provided valuable insights into the main topics related to the brand on Twitter.

We fed the dataset into a topic-modelling algorithm and observed the most commonly occurring words in each topic. The **coherence score** for these topics was **-4.7586** (Figure 10) which is moderate and suggests that the generated topics are fairly coherent. The topics are:

Topic 1: This conversation is focused on fashion and style, with words like "loving", "shop my closet", "Poshmark", "style", and "fashion. It appears that individuals share their unique advice and discuss Nike-related fashion items.

Topic 2: This topic revolves around Nike's range of sneakers and shoes, most notably the Air Jordan Line. People are discussing the hottest releases of these products, including words like "shoes", "Air Jordan 13" and "sneakers".

Topic 3: Adidas Stan Smith is a popular topic of conversation, with people comparing and discussing the differences between Nike and Adidas shoes. Specifically looking at the Stan Smiths, words like "smith", "stan" and "stan smith shoes" are used when trying to differentiate one from another.

Topic 4: The conversation revolves around Nike products and where to buy them - with keywords like "men", "black", "white", "size", "eBay", "shop" & "online". It appears that individuals share tips on how to get their hands on these items at their best prices.

Topic 5: This topic appears to be related to fashion and style. People likely compare Nike products to those of other popular brands, such as Adidas, Ag Adriano Goldschmied, and ShopMyCloset, and discuss their sense of fashion.

This topic analysis illustrates the key topics associated with a certain brand. This data can serve as a source of knowledge for making informed decisions. For example, Nike could use this insight to create more relevant social media posts and improve their engagement with consumers. Additionally, this can be beneficial in improving their products.
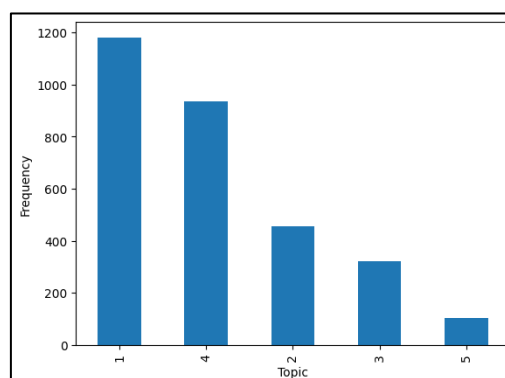

Figure 10: Frequency of each topic

4. 5 Attitudes of Users Mentioning the Brand

Sentiment analysis is a valuable tool for determining how customers feel about a brand. The sentiment analysis of tweets referencing Nike indicated an overwhelmingly favourable opinion, with **47.5%** (Figure 11) of the tweets being **positive**.

Upon analysing tweets about Nike, we found that the **average sentiment score was 0.40**, signifying a positive public attitude towards it.

In addition, we used NLP techniques to discover the sentiments of tweets. Of the seven emotions (anger, disgust, fear, joy, sadness, surprise, and trust), most were associated with **joy**. It appears that people on Twitter generally have positive feelings, such as joy, when discussing Nike. This is a clear sign of customer satisfaction with a brand. (Figure 13)
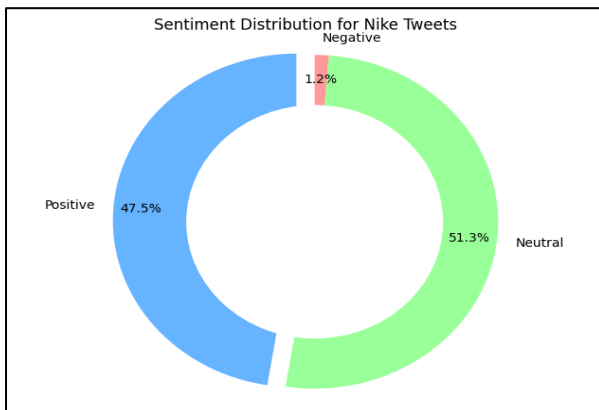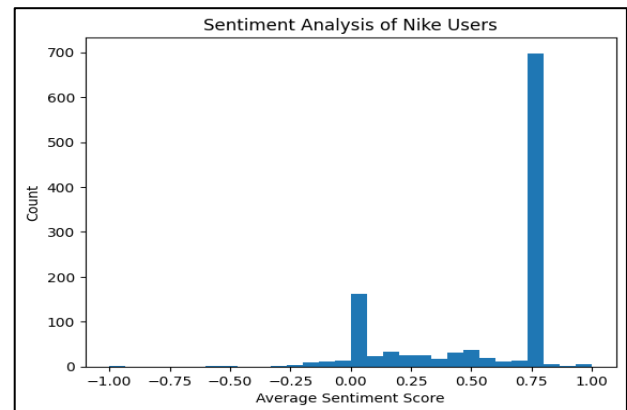

Figure 11: Sentiment Distribution for Nike Tweets

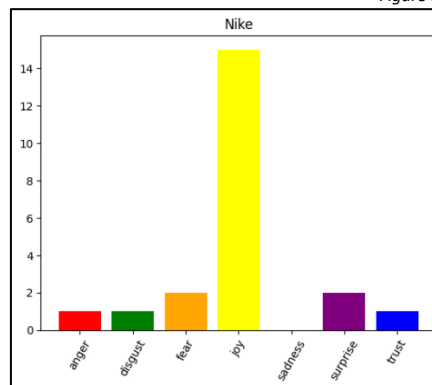Figure 12: Sentiment Analysis of Nike Users

Figure 13: Emotions Distribution for Nike Tweets

4.6 Geospatial Location of Mentions

Examining the geo-location data from Nike's Twitter mentions can provide valuable insights into how far the brand has reached. We identified the regions that needed more attention to the brand presence and those that had already welcomed it with open arms.

The results show that Nike has a robust presence and recognition among customers in the United States, as shown by the high number of brand mentions it receives on Twitter. This demonstrates the popularity and establishment of the brand in this area. The reason for Nike's success could be its US headquarters, the large consumer market there, or its well-developed retail network in the country.

After the US, Europe and Asia are the next regions with notable Nike brand mentions on Twitter. This demonstrates its global success, and how it can engage people from different countries.
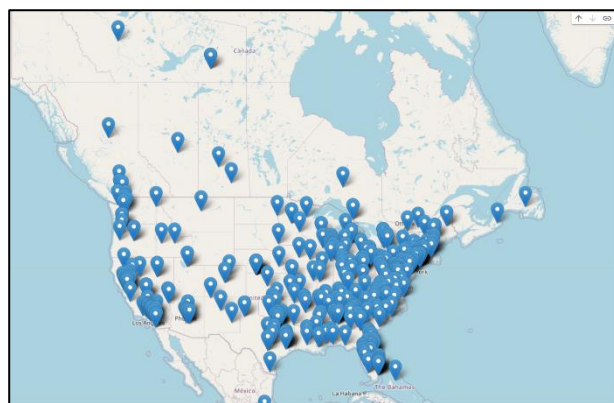
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Figure 14: Nike Tweets markers on the Map

Figure 15: Zoomed view of Figure 14

4.7 Companies Promoting the Brand

In this section, we take a closer look at companies on Twitter that promote Nike. After investigation, we discovered that Poshmark App had a notably larger number of tweets referencing Nike than eBay. Our analysis revealed that throughout the past six months, Poshmark App tweeted about Nike approximately **1200 times** while eBay posted only **70 times**.

Figure 16:Top Accounts Mentioning Nike
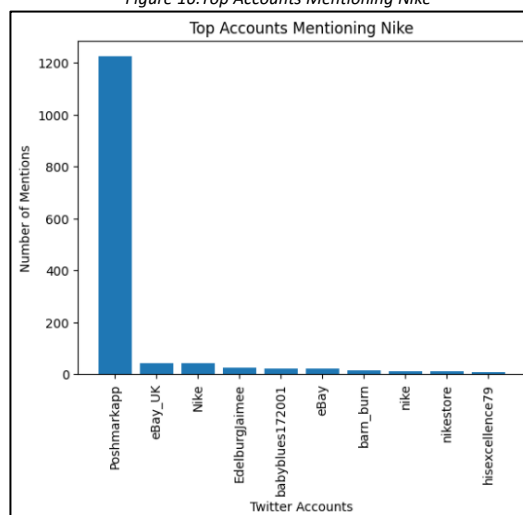
5. Micro-Influencer Identification

To determine the relevance of an author's profile to the Nike brand, we used a combination of follower counts, engagement rates, and relevance to the Nike brand. Based on the given dataset, we identified author_id as having the highest positive sentiment towards Nike and a good engagement rate with their followers. Ultimately, this analysis enabled us to identify authors who were best suited to creating content for Nike that was both engaging and authentic. We identified a micro-influencer from **Los Angeles** who tweeted primarily in **English**. This influencer has an impressive engagement rate, with an average number of retweets per tweet of five and **41 favourites each time**. Thus far, they have only tweeted organic content that resonates well with their followers. This makes them an ideal choice for a digital marketing campaign and a great asset to any team seeking to reach their target audience in the most effective way possible.

Figure 17: Distribution of Retweets and Favourites of the micro-influencer

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