Nike: Sentiment analysis on Vaporfly shoes

Golden Gate MSBA 324 Web and Social Analytics

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Brand of company: Nike

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Introduction

Nike has used social media analytics to understand their consumer sentiment for improving its brand perception and revenue. Among many of Nike's shoe lines, Vaporfly shoes are the fastest shoe that improves the performance of the runner (Ostere, 2020). The research proposes Vaporfly gives athletes more energy efficiency due to the shoes' foam and carbon sole (Woodward, 2020). Though Athelets used Vaporfly shoes in the world's 2 marathons and made a victory, its existence is still questionable in sports (Woodward, 2020). On the other hand, the revenue of Nike for 2020 was $37.403 Billion which shows a 4.38% decline from 2019 (macrotrends, n.d.). The goal of the case study is to analyze the customer sentiment and perception of Vaporfly shoes. The study will further help to launch the social web campaigns and increase the revenue of Nike by 5% by 2021. This paper will also examine Nike's rival brand Adidas. The analysis will also focus on Adidas's Yeezy shoes. The findings, recommendations, and conclusion will be supported by research done on both brands.

Problem Statement

The objective of the project: Vaporfly is declared to be the fastest shoes but despite its success, experts have criticized Vaporfly shoes as "unfair" and "a form of technology doping" (Mohamed, 2019). Through this study, we will investigate what sentiments the general public express about Vaporfly on Twitter.

Metric to track objective: Tweets from Twitter will be used as the variable to help us with the sentiment analysis for Vaporfly shoes. Hence, out of 90 attributes, only the "text" attribute from our dataset will be analyzed.

Success criteria: Using sentiment analysis results, we would like to launch a social web market campaign on Vaporfly and increase the revenue of Nike by 5% by 2021.

Model Selection

Sentiment analysis: Sentiment analysis will be used to identify positive, negative, and neutral sentiments. It can produce key views to obtain the genuine perception of the consumers toward the Vaporfly shoes.

Text Mining: Text mining will be appropriate to understand the context of the sentiments. It will cover which top words are used in tweets to express positive and negative sentiments. Under text mining techniques, Word Cloud will be used to understand what keywords were used in tweets to derive positive/negative sentiments.

Reason for Selecting the Model: Sentiment analysis is the best way to extract opinions and use them for the benefit of the business operation. It can be used to predict purchases for the future for Vaporfly releases. By looking at the present trends and perception, the marketing team can plan for future marketing and product development. It can improve the brand image and boost the revenue of Nike.

Text mining will be appropriate to understand what kind of words are used to express the sentiment towards brands. It will help us to know whether there is extreme like/dislike towards the Vaporfly brand. The most frequently used terms and topics can be helpful to evaluate the brand identity and helps to build our strategy for market campaigns. It will help to identify words that the general public expresses on tweets.

Solution Process

Step 1. Examine the Twitter handles used for Vaporfly. Extract the data of Vaporfly shoes with the help of Twitter API.

Step 2. Using R and its packages, perform cleaning of the text data i.e tweets from the consumers.

Step 3. Perform sentiment analysis on tweets with the help of R.

Step 4. Plot the graph for the sentiment analysis which can help to get a quick insight into the shoes' sentiments.

Step 5. Identify and plot the graph for top words (with frequency) that are used in tweets.

Furthermore, identify top words used to express positive and negative sentiments.

Step 6. Create and plot a word cloud to understand which terms or topics are used frequently.

Step 7. Research on Adidas company and its shoe "Yeezy" to compare the situation of Nike's

Vaporfly shoes and do a competitor analysis.

Step 8. Provide conclusions and recommendations for Vaprfly shoes based on the analysis.

Research

Primary Research: The data was gathered from Twitter to get an insight into the sentiments of the

Vaporfly brand. On Twitter, there has been consistent growth of followers of Nike. Below is the

snapshot of Nike followers increased in the past month (12th October 2020 to 10th November 2020).

Twitter is the social place where Nike and its shoes are talked about most extensively.
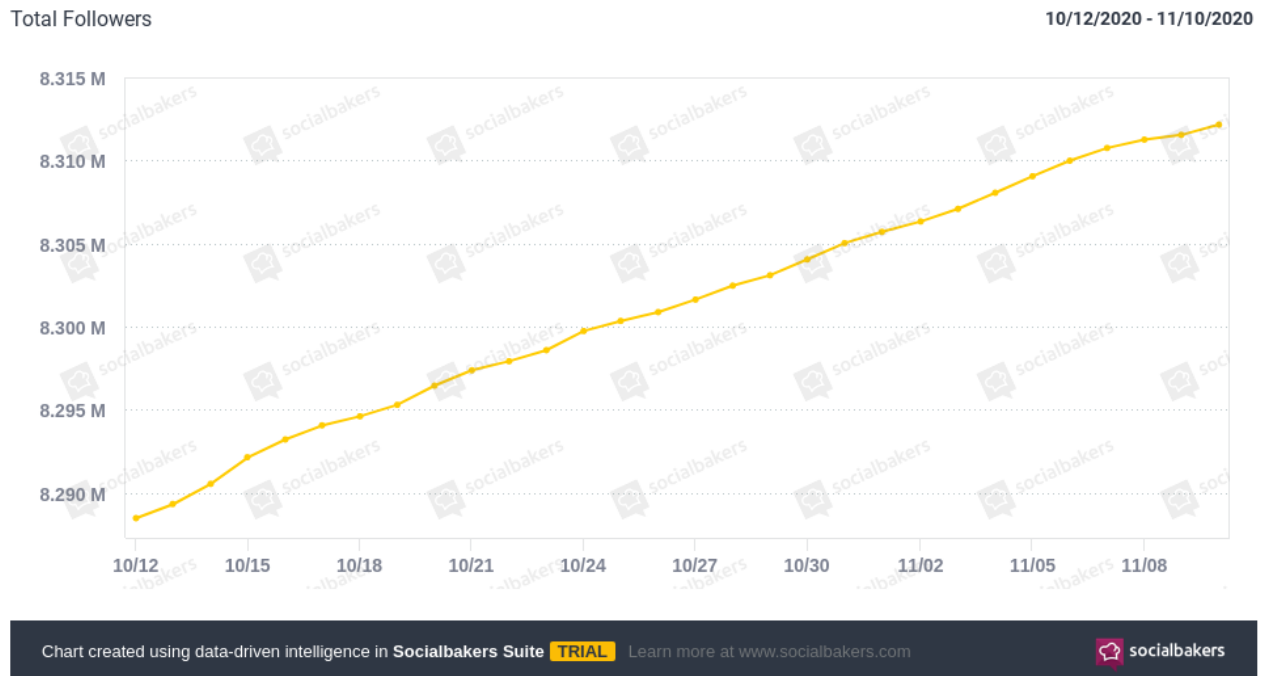

Figure 1. Increment in Followers of Nike on Twitter for past month (12th Oct 2020-11th Nov 2020)

Retrieved from Socialbakers

Secondary Research: There are articles, news, blogs published online that supports the goal of the analysis. It also supports my claims, conclusion, the recommendation in the case study. All the sources are cited in the bibliography section.

Software and Visualization

R programming language is used to analyze Nike's Vaporfly shoes. The data has been scarped from Twitter for both brands Nike's Vaporfly and Adidas. The handles used to collect the data is "Vaporfly". The data is filtered for the English language and contains 364 observations. Tweets are required for conducting the study on sentiments of the product and understand the current market situation.

To collect the tweets, the first step is to set up the authentication (API keys, token, etc.) and extract the data with the help of Twitter and R. Below is the screenshot of code from R:

```
> #Authentication setup and token
> consumer_key <- '█████████████████████'
> consumer_secret <- '████████████████████████████████████████████████████'
> access_token <- '███████████████████████████████████████████'
> access_secret <- '████████████████████████████████████'

> app name <- "SwetaGGU"
> token <- create_token(app = app_name,
+ consumer_key = consumer_key,
+ consumer_secret = consumer_secret,
+   access_token = access_token,
+   access_secret = access_secret)
```

The next step is to extract the data from Twitter and save the file in CSV format.

```
> Nike_Vaporfly <- search_fullarchive("Vaporfly",
+ env_name = "324API",
+ fromDate = "202001010000",
+ toDate="202011060000",
+ n=1000)

> save_as_csv(Nike_Vaporfly, "Nike_Vaporfly.csv"
+ prepend_ids = TRUE, na = "", fileEncoding = "UTF-8")
```

Though data was collected from 1st January 2020 to 6th Nov 2020 with limit of 1000 tweets, data is

filtered for the English language. The final dataset has 364 observations with 90 variables with time

stamp 14th October 2020 to 5th November 2020.

```
> Vaporfly.df<-read.csv("Nike_Vaporfly.csv", header=T)
> Vaporfly <- Vaporfly.df[Vaporfly.df$lang == 'en',]
> Vaporfly <- data.frame(Vaporfly)
> attach(Vaporfly)
> head(Vaporfly$text)
[1] "Chasing sunset this time around.\n\nI believe I can fly,
[2] "What a day! In politics and outside of politics. Iâ€™m j
[3] "Restocked on #Nike US.\nNike ZoomX VaporFly NEXT%.\nâ€"&
```

The next step is to clean the text data. Below code is used to remove http elements and punctuation,

convert text to lowercase, add id for each tweet, remove stop words.

```
> Vaporfly$stripped_text<- gsub("http.*","", Vaporfly$text)
> Vaporfly$stripped_text<- gsub("https.*","", Vaporfly$stripped_text)
> Vaporfly_clean <- Vaporfly %>% dplyr::select(stripped_text) %>%
+ unnest_tokens(word, stripped_text)
> Vaporfly_keywords <- Vaporfly_clean %>% anti_join(stop_words)
Joining, by = "word"
```

Sentiment Analysis: To understand and visualize the sentiments for Vaporfly shoes, the below code

is used. It displays the sentiments in five categories: "Very Positive", "Positive", "Neutral", "Very

Negative", "Negative".

```
> encodeSentiment <- function(x) {
+    if(x <= -0.5){
+      "Very Negative"
+    }else if(x > -0.5 & x < 0){
+      "Negative"
+    }else if(x > 0 & x < 0.5){
+      "Positive"
+    }else if(x >= 0.5){
+      "Very Positive"
+    }else {
+      "Neutral"
+    }
+ }
> tweetSentiments <- get_sentiment (Vaporfly$text, method = "syuzhet")
> tweets <- cbind(Vaporfly, tweetSentiments)
> tweets$sentiment <- sapply(tweets$tweetSentiments,encodeSentiment)
> ggplot(tweets, aes(sentiment)) +
+ geom_bar(fill = "aquamarine4") +
+ theme(legend.position="none",
+ axis.title.x = element_blank()) +
+ ylab("Number of tweets") +
+ ggtitle("Tweets by Sentiment")
```
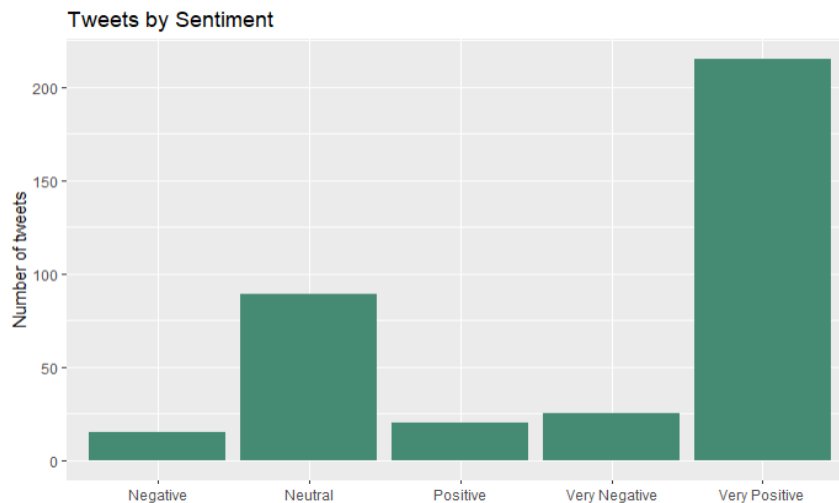
Figure 2. Tweets by Sentiment

Text Mining: We would like to understand the frequency of terms that are used to express the

opinion about the shoes.

```
> Vaporfly_keywords %>% count ( word, sort = TRUE ) %>% top_n ( 20 ) %>%
+ filter ( substr ( word, 1, 1 ) != '#', # omit hashtags
+ substr ( word, 1, 1 ) != '@', # omit Twitter handles
+ n > 10 ) %>% # only most common words
+ mutate ( word = reorder ( word, n )) %>% ggplot ( aes ( word, n, fill = word )) +
+ geom_bar ( stat = 'identity' ) + xlab ( NULL ) + theme ( legend.position = "none" ) +
+ coord_flip ( ) + labs ( y = "Count", x = "Keywords",
+ title = "Keywords Associated with Vaporfly" )
```

To visualize the frequency of terms, we plotted a bar chart to get a quick insight into the opinion and
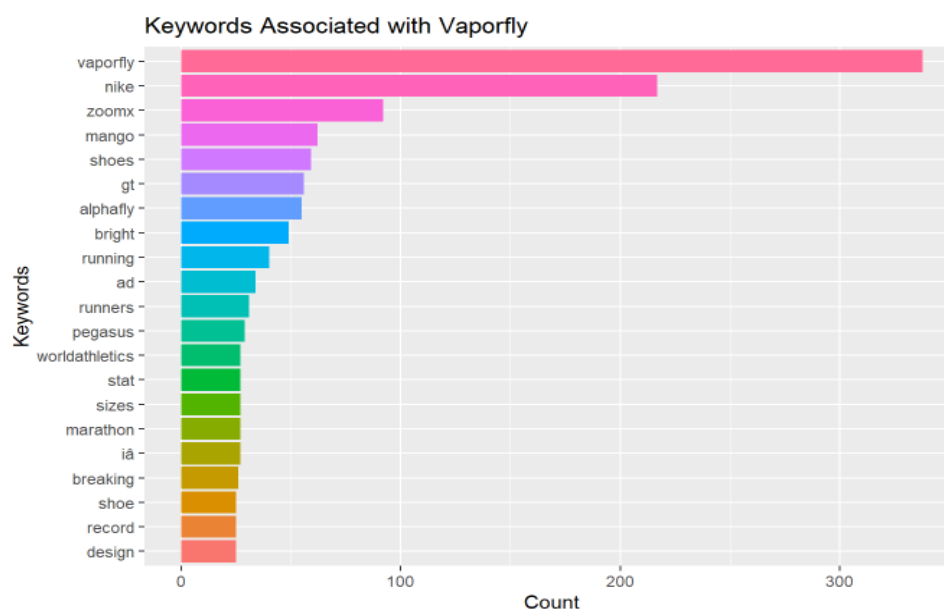
sentiments of the consumer.

Figure 3. Bar chart: Keywords associated with Vaporfly.

To understand how frequently the positive and negative terms are used for Vaporfly shoes, we

created a bar chart for positive and negative words. Below code is used to create a bar chart.

```
> Vaporfly_bing <- Vaporfly_clean %>% inner_join ( get_sentiments ( "bing" )) %>% count ( word,
+ sentiment, sort = TRUE ) %>% ungroup ( )
> Vaporfly_bing %>% group_by ( sentiment ) %>% top_n ( 10 ) %>% ungroup ( ) %>%
+ mutate ( word = reorder ( word, n )) %>% ggplot ( aes ( word, n, fill = sentiment )) +
+ geom_col ( show.legend = FALSE ) + facet_wrap ( ~sentiment, scales = "free_y" ) +
+ labs ( title = "Keywords associated with Vaporfly's negative & positive sentiment", y = "Contribution to Sentiment",
+ x = NULL ) + coord_flip()
```
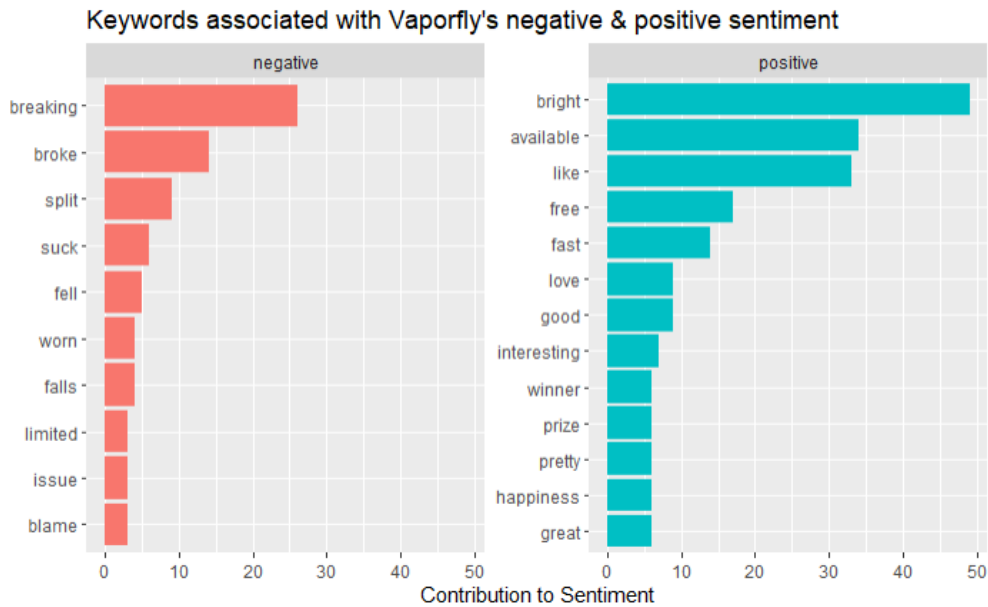

Figure 4. Bar chart: Keywords associated with positive and negative sentiment.

To understand more on topics and terms that are discussed by the customer, we created a word cloud

dividing into positive and negative sentiment.

```
> Vaporfly_clean %>% inner_join(get_sentiments ( "bing" )) %>%
+ count ( word, sentiment, sort = TRUE ) %>%
+ acast ( word ~ sentiment, value.var = "n", fill = 0 ) %>%
+ comparison.cloud ( color = c ( "red", "blue" ), max.words = 200)
Joining, by = "word"
```

Figure 5. Word Cloud

Model Results

Sentiment analysis and text mining gave valuable insight into the sentiments of the consumer. The

result of sentiment analysis says the number of tweets that have "very positive" sentiments is more

than 200 out of 364 (Figure 1). The other powerful sentiment is neutral that has more than 80 tweets.

The other sentiments such as "very negative", "negative" and "positive" is very less compared to

"very positive" tweets (Figure 1). Overall, the top 5 keywords used in tweets are "Vaporfly", "nike",

"zoomx", "mango", "shoes" (Figure 2). There are other keywords such as "marathon",

"worldathletics", "design" are used frequently. The top 5 terms used to express negative sentiments

are "breaking", "broke", "split", "suck", "fell" while "bright", "available", "like", "free", "fast" are

used to express positive sentiments in tweets by consumer (Figure 4). Word Cloud was designed

with positive and negative sentiments. The positive words are far more than negative words (Figure

5). The words used to express positive sentiment are "love", "happy", "super", "great", "interesting", "pretty".

Results Interpretation

The above sentiment analysis and text mining give insights about Vaporfly shoes and shows that the number of positive sentiments is more than the negative sentiments. The analysis on the tweets is deriving that there is more customer with a positive opinion than a negative opinion. The most frequent words used for expressing the positive and negative sentiment are "bright" (Figure3) and "breaking" respectively. Both are also available in the overall top keywords used in the tweets (Figure 4). The top keywords associated with Vaporfly such as "running", "runners" show and reflect the objective of the Nike brand. There are other keywords "marathon", "worldathletics", "design" is used in tweets which shows that the controversy on Vaporfly shoes is still a discussion topic among consumers (Figure 4). The result of Word Cloud suggests that there are more positive words used than negative words. "love", "pretty", "interesting", "super" keywords expresses the positive opinion about the shoes (Figure 5). The overall analysis reports on sentiments of the consumers can be used to start the market campaign. This will improve the brand image and boost revenue by 5% by 2021.

Situation Comparison

For competitor analysis, Adidas would be the best choice for Nike. Both companies are relying on a massive following in various social media places such as Facebook, Twitter, and YouTube. Both companies are growing consistently, and their social media marketing strategy is influenced by sentiment analysis and text mining. Below is the graph for revenue analysis of Nike, Adidas, and Puma brand:
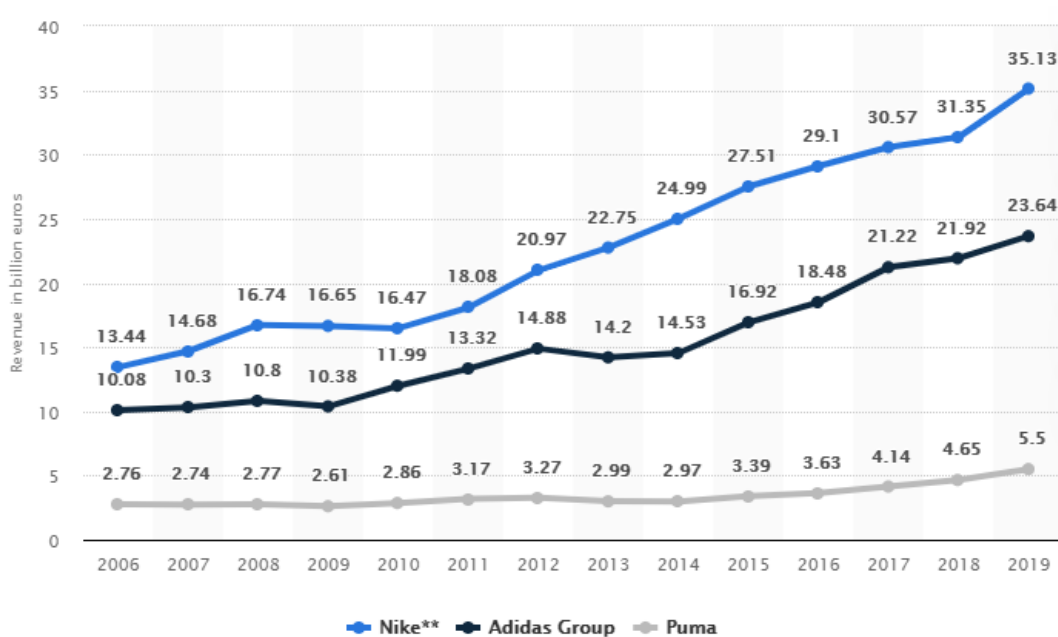
Figure 6. Revenue analysis of Nike, Adidas and Puma brands. Retrieved from Statista.

Competitors focus on connecting to their target audience by using the public emotions and understanding the latest trend on social media. Both brands Nike and Adidas relate to footwear and athletic sporting. Let's talk about the Vaporfly and Yeezy shoes from Nike and Adidas brands respectively. Vaporfly has faced controversy when Eliud Kipchoge used the Vaporfly shoes in marathons and create the world record by finishing a marathon under 2 hours. Nike's rivalry brand Adidas Yeezy also faced controversy when Kanye West stopped the partnership with Nike (SneakerFreaker, 2018). Yeezy has reestablished the image in front of the public eye by using social media. Yeezy brand was promoted on many social media especially on Instagram by many celebrities (Lee, 2020). The brand was shown on Instagram by top celebrities to be in the public eye and regain its image. Hence, celebrity endorsement was one of the most influential ways to keep attention on the brand. In 2015, it helped to increase the sales at Adidas by 14% and net income went up 10%. Besides, Nike has only 16 accounts on Instagram while Adidas has 28 accounts on Instagram where they publicize the shoes to improve the revenue by building a positive image in the public eye.

Conclusion

According to Nike founder Phil Knight, "it doesn't matter how many people hate your brand as long as enough people love it" (Beer, 2019). The overall result says that Vaporfly shoes have more positive sentiments than negative sentiments. Though, People expresses their love for Vaporfly in tweets, discussion of Vaporfly's design and its existence in sports is still discussed in social media platform. The new technical rules of sports shoes in the Olympics and other sports events declare that the midsoles on shoes cannot be thicker than 40 millimeters. Though Vaporfly shoe thickness is 36 mm, people still not aware of it (Arisawa, 2020). It is visible that there is a very less number of negative tweets observed for the Vaporfly shoes. Nike has already reported that Nike's revenue is decreased by 4.38% compared to 2019. To further improve the image of Vaporfly, the analysis should be used to plan and launch the social web market campaign. This can boost the revenue of Vaporfly shoes by 5% by 2021.

Recommendations

1. Nike should start a social campaign for Vaporfly shoes on Instagram. The current metrics show that it has only 16 accounts where Facebook and Twitter have 108 pages and 104 handles respectively (unmetric, n.d.)

2. Nike should declare in the social events consistently that they follow all the technical rules declared for sports events. It will help people to be aware that its existence is not controversial anymore in sports (Arisawa, 2020).

3. Apart from the innovation of product, Nike should spend more time and money to launch and promote more marketing campaigns that share how Vaporfly shoes are most suitable for sports and athletes. For instance, Nike started a "Breaking2" marathon project to showcase the Vaporfly in the social media (Hobbs, 2017).

4. Nike should identify the opportunity to participate in sports events where Vaporfly can be used and shared their value in social media with the success stories.

5. Nike should post the content of Vaporfly with a higher frequency than before to improve customer engagement.

6. Nike should utilize all available social media platforms and should not concentrate on Twitter. Few campaigns were launched only on one social media i.e Twitter.

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