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Analyzing Customer Sentiment and Brand Perception: A Comparative Study of Nike

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ABSTRACT

This research paper investigates the role of social media in shaping brand perception and fostering community among customers, with a specific focus on Nike and its subsidiary Converse. Leveraging insights from a case study on footwearnews.com, we explore how Nike has successfully utilized social media platforms to enhance its market position, capturing 57% of the top footwear brand share. In contrast, Converse has struggled, contributing only 7% to the overall sales in the last season. To identify factors contributing to this disparity, we conduct a Twitter sentiment analysis comparing Converse with its major competitor, Vans. This study aims to uncover the underlying issues affecting Converse's market performance and provide actionable recommendations for leveraging social media to improve brand perception and sales.

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Introduction

Nike has effectively harnessed social media platforms to gain a deeper understanding of its customers' experiences and lifestyles, significantly enhancing its brand perception. By engaging with its audience on platforms like Instagram, Twitter, and Facebook, Nike has fostered a sense of community and belonging among its supporters, turning customers into brand advocates. This strategic use of social media has not only helped Nike maintain its position as the top footwear brand, capturing approximately 57% of the market share, but also strengthened its overall brand loyalty and customer retention. However, despite Nike's success, its subsidiary Converse has not performed as well. According to an article on footwearnews.com, Converse accounted for only 7% of Nike's overall sales in the last season. This significant gap in performance highlights the challenges Converse faces in the highly competitive footwear market. To address these issues, our study will conduct a Twitter sentiment analysis, comparing Converse with its major competitor, Vans. By analyzing customer sentiments and feedback on Twitter, we aim to uncover the factors contributing to Converse's lower market share and provide insights into potential strategies for improvement. The Twitter sentiment analysis will focus on several key areas, including customer engagement, brand perception, and overall sentiment towards both Converse and Vans. By examining these aspects, we hope to identify the strengths and weaknesses in Converse's social media strategy and offer recommendations for leveraging social media more effectively. This research will provide valuable insights into how Converse can improve its market performance and align more closely with the successful strategies employed by its parent company, Nike [1].



Problem Statement

The substantial performance gap between Nike and Converse raises critical concerns regarding Converse's market positioning and competitiveness. Addressing these issues is essential for Converse to improve its market performance and better align with Nike's successful strategies.

Business Problem Background

Despite Nike's overall market strength, its subsidiary Converse has faced significant challenges. Converse accounted for only 7% of Nike's total sales in the last season, indicating a considerable gap in performance compared to Nike's main brand. This disparity raises concerns about Converse's market positioning and competitiveness within the footwear industry. The underperformance of Converse, especially when juxtaposed with the success of Nike, highlights a critical business problem that needs addressing.

Project Aim

This study aims to investigate the factors contributing to Converse's lower market share, focusing specifically on customer sentiments and perceptions as expressed on social media platforms like Twitter. By conducting a sentiment analysis of tweets related to Converse and its major competitor Vans, the research seeks to uncover insights into consumer preferences, brand perception, and overall market dynamics.

Success Criteria

The success criteria defined for this research is to achieve a 50% or greater positive social media sentiment score. To gain a better understanding of public perception regarding Converse, I analyzed tweets about the brand to capture the sentiments expressed by users. Many of these tweets are highly expressive, offering valuable insights into consumer attitudes and emotions. By calculating "sentiment scores" for each tweet, I can determine whether the overall sentiment is positive or negative. In addition, the metrics used to track the objective of this study, is the positive social media score. With this metric, we will understand social media involvement and review the distribution score of brands from the sentiment analysis to a brand image evaluation on social media like Twitter.

Model Selection

To gain a better understanding of public perception regarding Converse, I analyzed tweets about the brand to capture the sentiments expressed by users. Many of these tweets are highly expressive, offering valuable insights into consumer attitudes and emotions. By calculating "sentiment scores" for each tweet, I can determine whether the overall sentiment is positive or negative. To compare consumer feedback on Converse and Vans, I will use Twitter Sentiment Analysis as our primary model. This approach will help identify differences in how users perceive each brand, providing a deeper understanding of the factors influencing Converse's market performance compared to Vans.

Solution Process

The process to complete this research will be conducted as describe in the below steps.

- **Step 1:** Examine Nike's financial performance using their 10K report.
- **Step 2:** A study of the preferences of the younger generation for Nike and its competitors.
- **Step 3:** Use computer language R to apply sentiment analysis via the Twitter API.
- **Step 4:** Create word clouds of brands for Converse and its competitor Vans.

Primary Research

For this case study, data was collected by using the open-source programming language R to scrape tweets from Twitter. Additionally, I conducted secondary and tertiary research to establish the context of the case study. According to Nike's 2021 10-K filing, under the Income Statement in the Revenue section, Converse's revenue increased by 16 percent in fiscal 2021 compared to fiscal 2020 (Nike FY2021 Annual Report)

CONSOLIDATED OPERATING RESULTS							
REVENUES							
(Dollars in millions)	FISCAL 2021	FISCAL 2020	% CHANGE	% CHANGE EXCLUDING CURRENCY CHANGES ⁽¹⁾	FISCAL 2019	% CHANGE	% CHANGE EXCLUDING CURRENCY CHANGES ⁽¹⁾
NIKE, Inc. Revenues:							
NIKE Brand Revenues by:							
Footwear	\$ 28,021	\$ 23,305	20 %	18 %	\$ 24,222	-4 %	-2 %
Apparel	12,865	10,953	17 %	15 %	11,550	-5 %	-3 %
Equipment	1,382	1,280	8 %	7 %	1,404	-9 %	-6 %
Global Brand Divisions ⁽²⁾	25	30	-17 %	-17 %	42	-29 %	-26 %
Total NIKE Brand Revenues	42,293	35,568	19 %	17 %	37,218	-4 %	-2 %
Converse	2,205	1,846	19 %	16 %	1,906	-3 %	-1 %
Corporate ⁽³⁾	40	(11)	—	—	(7)	—	—
TOTAL NIKE, INC. REVENUES	\$ 44,538	\$ 37,483	19 %	17 %	\$ 39,117	-4 %	-2 %
Supplemental NIKE Brand Revenues Details:							
NIKE Brand Revenues by:							
Sales to Wholesale Customers	\$ 25,898	\$ 23,156	12 %	10 %	\$ 25,423	-9 %	-7 %
Sales through NIKE Direct	16,370	12,382	32 %	30 %	11,753	5 %	8 %
Global Brand Divisions ⁽²⁾	25	30	-17 %	-17 %	42	-29 %	-26 %

Figure 1: Consolidated Operating Results

To analyze revenue trends over the past several years, I decided to examine Converse's financial performance from 2014 to 2021 (Smith, 2021).

Year	Converse Revenue (\$millions)
2021	\$2,205 M
2020	\$1,846 M
2019	\$1,906 M
2018	\$1,886 M
2017	\$2,042 M
2016	\$1,955 M
2015	\$1,982 M
2014	\$1,684 M

Figure 2: Converse Financial Performance 2014-2021

Plotting the revenue numbers in R to better understand the result graph:

```
> nike_converse_plot <- ggplot(data = converse, aes(x = converse$Year, y = converse$Revenue, group = 1)) + geom_line(color = "purple", lwd = 1.5) + geom_point(size = 1.5) + labs(title = "Converse Revenue 2014 - 2021", x = "Year", y = "Revenue in Millions ($)")
> nike_converse_plot
```

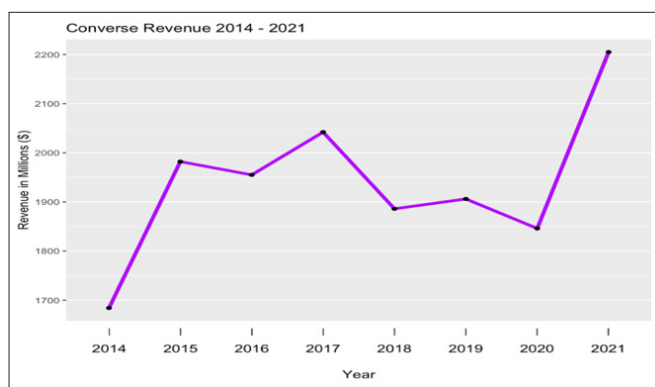


Figure 3: Distribution of Converse Financial Revenue 2014-2021

The chart above illustrates that Converse experienced significant revenue growth in the last year. When comparing this year's revenue to the previous seven years, it is evident that while revenue has fluctuated, the most recent year has seen the highest growth.

Secondary Research

The 42nd semi-annual Taking Stock with Teens poll, conducted by Piper Jaffray, includes responses from 10,000 teenagers from 44 states, with an average age of 15.8. According to the report, sports brands like Nike continue to dominate among young consumers, while Vans has a remarkable 11% growth. Converse in the other hand remains fourth on the list by having 7% growth among teens [2].



Figure 4: Favorite Footwear Brands

Plotting the revenue numbers in R to better understand the result graph:

```
> ggplot(brand_rank, aes(x = Year, y = Percentage, fill = Brand)) + geom_line(aes(color=Brand), size = 1) +
  geom_point(aes(color=Brand), size = 1) + scale_x_discrete("Year") + scale_y_continuous("Rank Score (%)") + labs(title =
  "The 5 Most Popular Footwear Brands", fill="Brand", colour = "Brand")
```

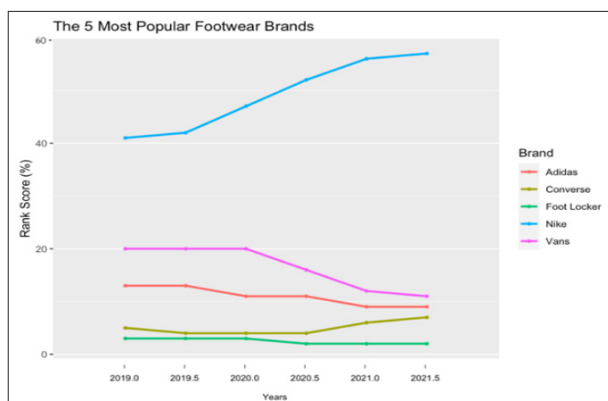


Figure 5: Distribution of Favorite Footwear Brands

Based on a Piper Jaffray poll, we created a line chart with the top 5 teen preferred footwear companies and their rating scores. Nike is at the top of the list, as seen by the line chart. Vans, on the other hand, has reached the second highest level of brands with a total of 11%. Lastly, Converse seems to have an increase in the last year, ranking it in number four [3].

Tertiary Research

The secret to Vans staying relevant, according to the results provided by FootWearNews, is connecting with the generation by knowing their demands and aesthetics. Vans stands out in a culture dominated by celebrities and sports people with oversized personalities. Furthermore, their social media success is the result of a genuine two-way discussion. When clients make a comment on Vans' social media network, they will receive an immediate response.

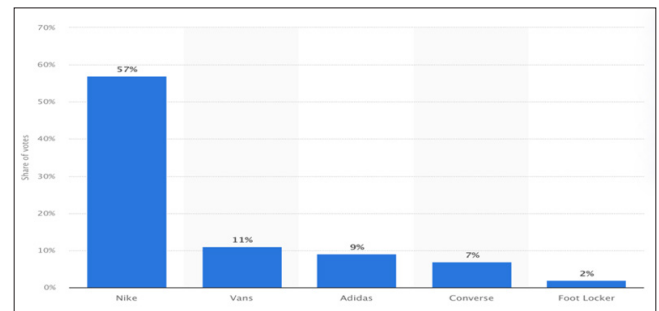


Figure 6: Distribution of Brands in Social Media

The result indicates that Vans has become a well-known brand among the younger generation in just a few years [4].

Software

In this case study, I will use R to acquire data from Twitter for visualization and sentiment analysis.

Installing the necessary libraries in R

```
> install.packages("RColorBrewer")
> install.packages("wordcloud")
> install.packages("base64enc")
> install.packages("twitterR")
> install.packages("ROAuth")
> install.packages("tm")
> install.packages("SnowballC")
> install.packages("syuzhet")
```

Figure 7: Library Installation in R

Loading libraries in R

```
> library(base64enc)
> library(twitterR)
> library(ROAuth)
> library(tm)
> library(SnowballC)
> library(syuzhet)
```

Figure 8: Library Loading Process in R

Assign Value for Request, Access and Authorize URL

```
> reqURL <- "https://api.twitter.com/oauth/request_token"
> accessURL <- "https://api.twitter.com/oauth/access_token"
> authURL <- "https://api.twitter.com/oauth/authorize"
```

Figure 9: Authorize URL in R

Setting up the Twitter Authentication in R

```
> consumerKey <- "maMgmc62tyWgj10LRPVMSDKqU"
> consumerSecret <- "iMk4ZWNPzg8wj0cvbo1QYVd17q5eFoJga3agd147MFxREqnpWK"
> accessToken <- "1508145057034952704-Yh1EvbiTiIgxS5j4P0RFX3rPj2TFdk"
> accessTokenSecret <- "o1QeyxfQs8Z1rVLU8mjVHPkbpPCmxNSdXgBey1Kvcjn4x"
> setup_twitter_oauth(consumerKey, consumerSecret, accessToken, accessTokenSecret)
```

Figure 10: Twitter Authentication in R

Collect 4000 Recent Twitter Tweets

```
> vans_ts <- searchTwitter("#Vans", n = 4000, lang = "en", resultType = "recent")
> nike_ts <- searchTwitter("#Converse", n = 4000, lang = "en", resultType = "recent")
```

Figure 11: Collect Data in R

Assign Value for Request, Access and Authorize URL

```
> reqURL <- "https://api.twitter.com/oauth/request_token"
> accessURL <- "https://api.twitter.com/oauth/access_token"
> authURL <- "https://api.twitter.com/oauth/authorize"
```

Figure 12: Library Loading Process in R

Pre-Processing of Data

```
> ## Data cleaning process:

> nike_txt <- sapply(nike_ts, function(x) x$text())
> nike_txt

> ## Taking a grouping of texts and interpreting each element of the vector as a document:
> nike_corpus <- Corpus(VectorSource(nike_txt))
> nike_corpus

> ## Removing punctuation of the group text:

> clean_nike_data <- tm_map(nike_corpus, removePunctuation)
> clean_nike_data

> ## Using tm_map function to remove words, and clean up the data:

> clean_nike_data <- tm_map(clean_nike_data, removeWords, stopwords("english"))
> clean_nike_data

> clean_nike_data <- tm_map(clean_nike_data, removeNumbers)

> clean_nike_data <- tm_map(clean_nike_data, tolower)

> clean_nike_data <- tm_map(clean_nike_data, stripWhitespace)

> clean_nike_data <- tm_map(clean_nike_data, removePunctuation)

> removeURL <- function(x) gsub('http\\://.*', '', x)
> clean_nike_data <- tm_map(clean_nike_data, content_transformer(removeURL))
```

Figure 13: Data Pre-Process in R

Word Cloud of Vans & Converse Brands

Next, we have conducted word cloud for famous brands like Vans and Converse.

```
> ## Creating the word cloud:
>
> wordcloud(clean_nike_data, scla = c(6,0.6), random.order = FALSE, use.r.layout = FALSE, colors = brewer.pal(9, "Dark3"))
```

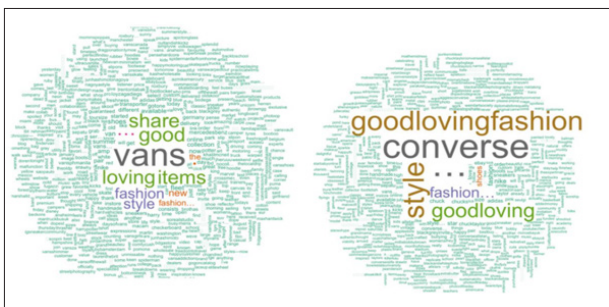


Figure 14: Word Cloud of Vans & Converse

As a result of the above, we can conclude that the most frequently used adjectives to describe both brands are good, loving items, fashion, loving, style etc.

Visualization

Next, we will plot the sentiment scores on a histogram for both brands to get a better idea of their Twitter feedback. To score our # Vans and #Converse, we'll use the functions get sentiment () and syuzhet package.

Encode Sentiment Function

```
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"
  }
}
```

Figure 15: Encode Sentiment Function in R

R Code to Display the Number of Vans by Sentiment Score

```
> vans.df <- twListToDF(vans_ts)

> vans.df$text <- sapply(vans.df$text, function(x) iconv(x, to = "UTF-8"))

> vans_sentiment <- get_sentiment(vans.df$text, method = "syuzhet")

> vans <- cbind(vans.df, vans_sentiment)

> vans$sentiment <- sapply(vans$vans_sentiment, encodeSentiment)

> ggplot(vans, aes(vans$sentiment)) + geom_bar(color = "lavender", fill = "cornsilk") + theme(legend.position = "none") + xlab("Sentiment Score") + ylab("Number of Vans") + ggtitle("Number of Vans by Sentiment Score")
```

Figure 16: Number of Vans by Sentiment Score in R

Visualization of the number of Vans by Sentiment Score

The plot reveals that there is a very high frequency of emotion score 2 and that it is somewhat skewed to the right, indicating that the majority of feedback for Vans on Twitter is favorable.

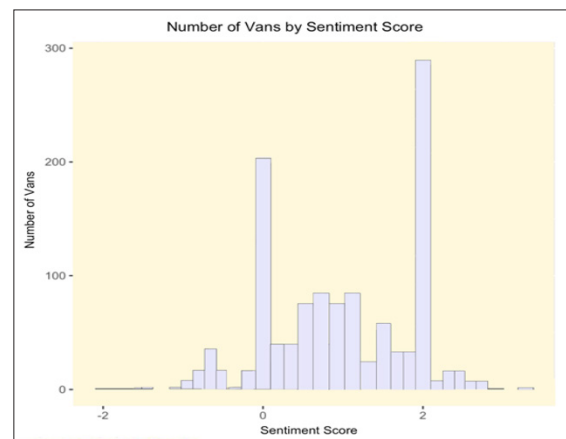


Figure 17: Number of Vans by Sentiment Score

Number of Converse by Sentiment Score in R

```
> converse.df <- twListToDF(converse_ts)

> converse.df$text <- sapply(converse.df$text, function(x) iconv(x, to = "UTF-8"))

> converse_sentiment <- get_sentiment(converse.df$text, method = "syuzhet")

> converse <- cbind(converse.df, converse_sentiment)

> converse$sentiment <- sapply(converse$converse_sentiment, encodeSentiment)

> ggplot(converse, aes(converse_sentiment)) + geom_bar(color = "lavender", fill = "cornsilk") +
  theme(legend.position = "none") + xlab("Sentiment Score") + ylab("Number of Converse") + ggtitle("Number of Converse by Sentiment Score")
```

Figure 18: Number of Converse by Sentiment Score in R

Number of Converse by Sentiment Score Visualization

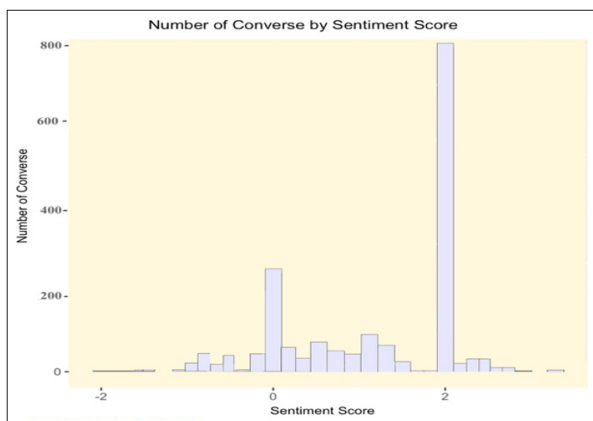


Figure 19: Number of Converse by Sentiment Score

The plot demonstrates that there is a very high frequency of emotion score 2 and that it is somewhat skewed to the right, indicating that most of the Converse comment on Twitter is favorable.

Situation Comparison

To compare the sentiment score distributions of both brands, we extracted the numbers from each data set using the below snippet of code:

```
> table(converse$sentiment)
> table(vans$sentiment)
```

The result is shown below:

Sentiment Distribution Table		
	Converse	Vans
Very Negative	79	61
Negative	54	42
Neutral	306	624
Positive	59	75
Very Positive	1150	1534

Figure 20: Sentiment Distribution Table

Model Results

In the context of the issue statement, we learn that majority of tweets are very positive, we have a quite percent of neutral, and low percent of tweets are negative.

```
> vans_distribution <- data.frame(variable = c("Vans", "Vans", "Vans", "Vans", "Vans"), Level = c("Very negative",
"Negative", "Neutral", "Positive", "Very Positive"), value = c(120, 30, 453, 80, 750))
> converse_distribution <- data.frame(variable = c("Converse", "Converse", "Converse", "Converse", "Converse"),
Level = c("Very negative", "Negative", "Neutral", "Positive", "Very Positive"), value = c(79, 54, 306, 59, 1150))
> compare <- rbind(converse_distribution, vans_distribution)
> compare$value <- ifelse(compare$variable == "Vans", -1 * compare$value, compare$value)
> compare$level <- factor(compare$level, levels = c("Vans", "Converse"))
> ggplot(data = compare, aes(x = compare$level)) + geom_bar(aes(x = compare$level, y = compare$value, fill =
variable), stat = "identity", position = "identity") + geom_text(aes(x = compare$level, y = compare$value, label =
abs(compare$value)), vjust = ifelse(compare$value >= 0, 0, 1)) + scale_y_continuous(labels = abs) + xlab("
Different Types of Tweets") + ylab ("Number of Tweets") + ggtitle("Comparison of Twitter feedback of Vans and
Converse") + coord_flip()
```

Figure 21: Sentiment Distribution in R

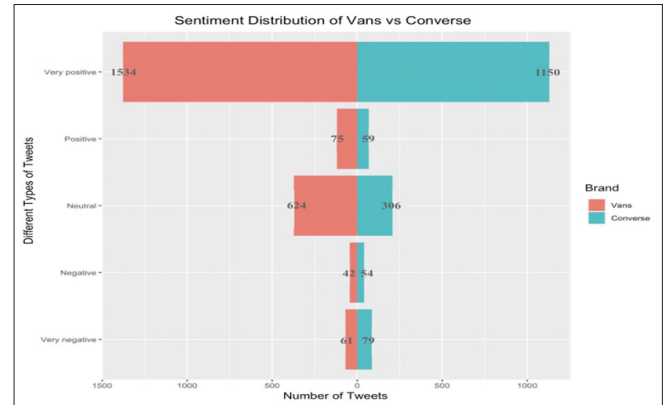


Figure 22: Sentiment Distribution of Vans vs Converse

Result Interpretation

In the context of the issue statement, we learn that very positive and positive sentiment score rank up ~ 48%. This is pretty near to the 50 percent desired good sentiment score. However, the Vans brand results in higher positive and very positive tweets than Converse. As for Converse, from the chart, seems like the brand is doing quite good and is increasing a lot. Even though its behind Vans for positive # of tweets it still contains a good score.

Conclusion

In this case study, I utilized historical data from Nike's 10K reports to evaluate Converse's financial performance over the past four years. We conducted a sentiment analysis and examined the volume of tweets mentioning the brand. A comparative analysis was performed between Vans, the second-largest footwear brand, and Converse, the fourth largest. Our findings revealed that Vans had a higher proportion of positive sentiment scores than Converse. Given the sales growth reflected in the data, it appears that the younger generation is becoming a key customer base for both Nike and Converse. To capitalize on this trend and continue boosting sales in 2022 and beyond, Converse should consider increasing their investment in social media to enhance brand engagement with younger consumers [5].

Recommendations

Customers in the footwear industry are known for their changing preferences. Consequently, Nike should focus on consistently delivering a reliable customer experience. Enhancing product searchability on social media platforms remains a critical area for Nike to concentrate on. Despite being a market leader in the teen footwear segment, Nike, particularly with its Converse brand, should consider innovative discount strategies in response to the pandemic. As consumers increasingly shop online and spend more time browsing, creatively adjusting pricing could attract more buyers and boost sales.

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