Contents

Table of Figure

Abstract:

This study delves into the complex world of consumer opinions by carefully examining internet evaluations for KFC and McDonald's that were obtained from Trustpilot. The study uses sentiment analysis, online scraping, and data visualization technologies to give organizations in the fast-food market relevant insights. The goal is to reveal a thorough grasp of brand perception by deciphering the emotional nuance and reasons hidden in customer evaluations. Web scraping is made easier with Data Miner, which gathers reviews while NLTK's Vader sentiment intensity analyzer determines the emotional tone. An analytical approach that is dynamic and real-time is enhanced by integration of the Trustpilot API and Tableau visuals. Insights for strategic decision-making are provided by the study's nuanced sentiment distribution, prevailing positive and negative phrases, and temporal trends. Beyond scholarly investigation, the research has practical commercial consequences that make transparent, customer-focused processes possible. Recognizing the limitations of data sources and the accuracy of sentiment analysis, the study expects ongoing improvement for increased influence on business results.

Introduction:

The fast-food industry stands at the intersection of consumer preferences and market dynamics, where success hinges on understanding and responding to customer sentiments. This research study examines online customer reviews for KFC and McDonald's on Trustpilot by utilizing a combination of web scraping, sentiment analysis, and data visualization approaches. The project's design and the smooth interaction with outside services are greatly impacted by the tools used. This research project reveals the motivations and rationales behind customer reviews for KFC and McDonald's on Trustpilot, aiming to illuminate the strategic significance of these insights in the contemporary business landscape.

The main driving force behind this study is the significant influence that consumer opinions may have on companies. Through the application of sentiment analysis and data mining, this study seeks to reveal the subtleties of consumer experiences with KFC

and McDonald's. Gaining insight into the fundamental causes of favorable or unfavorable attitudes can help companies improve customer satisfaction, make wise decisions, and hone their marketing tactics.

Objectives:

This study's main goal is to investigate the sentiment distribution found in Trustpilot customer evaluations for KFC and McDonald's. The study attempts to reveal the dominant emotional tone surrounding the companies by methodically examining the opinions stated in these reviews. Gaining an understanding of the distribution of positive, negative, and neutral attitudes paves the way for more in-depth analysis and offers a fundamental understanding of public perception.

The study looks at the distribution of emotion as well as important positive and negative terms in the customer evaluations. In order to delve into the details of consumer interactions, this goal is essential. Through identifying often used keywords, the research seeks to identify the factors that substantially influence either positive or negative attitudes. Businesses can benefit from this detailed information by learning which areas of improvement to tackle firsthand or which particular strengths to capitalize on.

Temporal trends in feelings are one of the research's other main goals. Understanding how attitudes change over time might help you better understand how dynamic consumer perceptions are. The study looks for trends that could affect consumer perceptions by comparing these trends to occasions, advertisements, or outside variables. This goal advances our understanding of the temporal dynamics of brand perception in a more strategic way.

The project intends to use Tableau to produce interactive visuals in order to effectively communicate the conclusions and insights derived from the data analysis. The goal is to convert unprocessed data into relevant and aesthetically pleasing dashboards. Stakeholders can examine sentiments, spot trends, and gain useful information with the help of these interactive visualizations. A more involved and knowledgeable decision-

making process is made possible by the interactive aspect of the visualizations, which also improves the research findings' accessibility and usefulness.

Approach:

To perform analysis on customer reviews, I have to perform social media analytics. For this I have used following tools and platforms.

- Trustpilot for customer reviews
- Data Miner for data scrapping
- Python NLTK for Sentiment Analysis
- Tableau for data visualizations

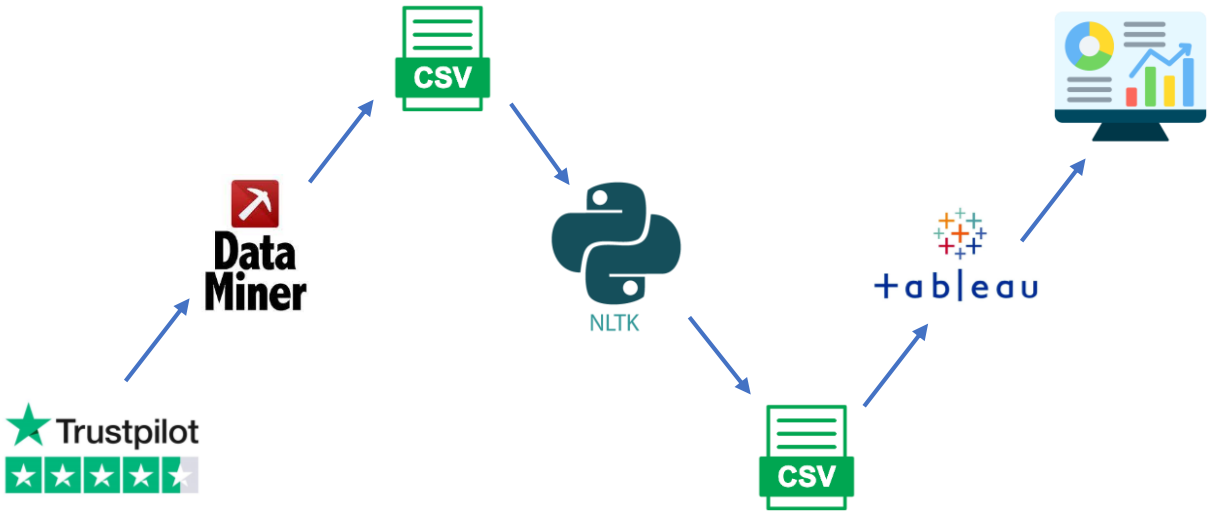


Figure 1: Research Methodology

I have used Data Miner on trustpillot website to scrap the customer reviews. From Data Miner I got CSV files of reviews for KFC and McDonald's. This CSV file is then preprocessed using Python to clean the reviews and make it ready for tableau and analyze the sentiments of the customers. After preprocessing another CSV file is generated that contains combined cleaned reviews of both companies. This file is used as a data source in tableau for data visualizations.

Implementation:

Social media analytics involves collecting and analyzing data from various social media platforms to derive insights into user behavior, preferences, and sentiments. In the context of this research, Trustpilot serves as a quasi-social platform where customers voluntarily share opinions and experiences.

Trustpilot:

On Trustpilot, nearly 3 million reviews are shared each month by users to assist one another in identifying excellent businesses and improving their purchasing decisions. Trustpilot stars are more than simply a rating; they are a statement to the world that customers genuinely adore your business and that you reciprocate. Because Trustpilot is so popular as a consumer review platform, it is the main source of data. It provides a rich dataset for sentiment analysis by offering a varied spectrum of viewpoints. Trustpilot's authenticity and credibility make it a trustworthy resource for gauging customer feedback.

Data Miner:

With the help of Data Miner, a free data extraction application and browser extension, users may swiftly gather safe data by scraping websites. Data is automatically gathered from websites and saved in CSV, Excel, or JSON formats. Data Miner was chosen because of its effective data extraction capabilities, flexible interface, and compatibility with other websites. In addition to offering an organized structure for data collecting, it streamlines the web scraping procedure and guarantees a solid basis for further research. Data miner is a program used by businesses to gather additional client information. They can use it to lower expenses, boost revenue, and create more successful marketing plans.

Firstly, I add Data Scrapper Extension to the web browser.

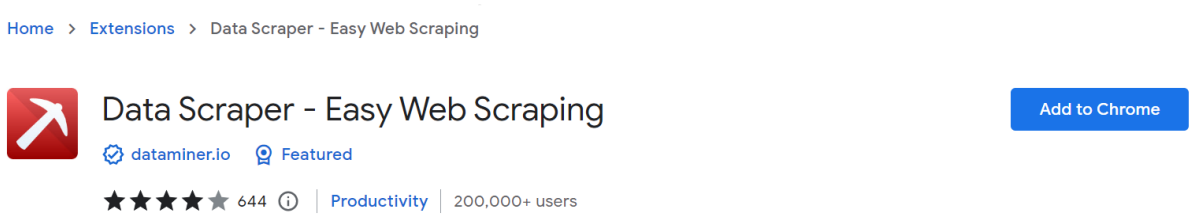


Figure 2: Adding Data Miner Extension

Then, I opened the web page (Trustpilot) from where I wanted to scrap data. I searched for KFC and McDonald's in truspilot separately. And then opens the data miner extension.

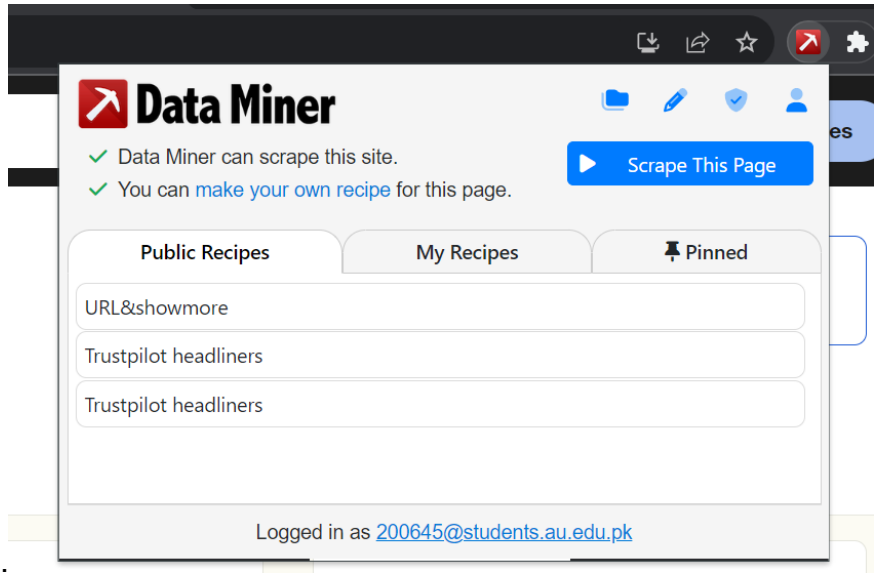


Figure 3: Data Miner Interface

I created a recipe (extraction instruction) according to the web structure of trustpilot. In this recipe I identified the columns and rows to scrap and the navigation button. By identifying the navigation button Data Miner can automatically jump to the next page to scrap more data. I scrapped for 200 pages on for both brands. I saved the scrapped files in CSV format. These files contain two columns "Text" and "TimeStamp".

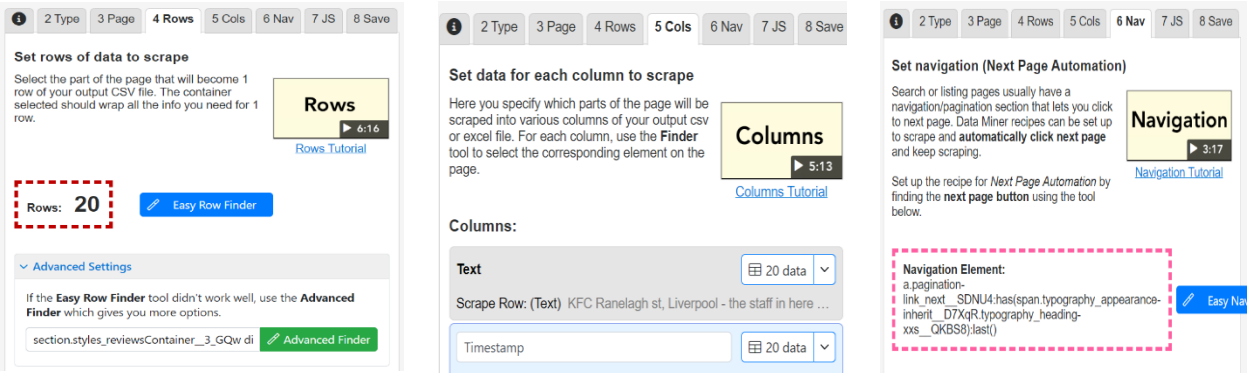


Figure 4: Making Recipe for Data Scrapping

Python and NLTK (Natural Language Toolkit):

Python is a strong, adaptable, and user-friendly language. The Python community is also very vibrant. Because it supports a variety of programming paradigms, it is utilized by numerous organizations. It manages memory automatically as well. Python applications that work with human language data for statistical natural language processing (NLP) can be built using the Natural Language Toolkit (NLTK) package. For tokenization, parsing, categorization, stemming, tagging, and semantic reasoning, it has text processing libraries. Its pre-trained model provides a sophisticated comprehension of the emotional tone in the reviews, making it a good fit for sentiment analysis.

	Text	Timestamp
0	Love the breakfast McMuffins especially bacon ...	2 days ago
1	Nice place but don't trust staff as many times...	2 days ago
2	Staff gave my food away to another person who ...	19 hours ago
3	Do not go to mcds in Harlow, Edinburgh road. P...	15 hours ago
4	Ordered £25 worth of food. It was delivered st...	A day ago
...	...	...
3995	Every time I order a delivery i receive my ord...	Sep 18, 2021
3996	Mac Donald's St.Helens Town Centre.Oh my word ...	Sep 18, 2021
3997	What has happened to McDonalds recently? How c...	Sep 18, 2021
3998	I am a regular customer of McDonald's abbey la...	Sep 18, 2021
3999	Chirk McDonaldsChirk McDonalds has a low hygie...	Sep 18, 2021

4000 rows × 2 columns

Figure 5: Dataset of Scrapped Reviews of McDonald's

	Text	TimeStamp
0	KFC Ranelagh st, Liverpool - the staff in here...	4 hours ago
1	Really wish I had taken notice of the reviews....	Updated 3 days ago
2	Ordered from deliverioo and got the mighty buc...	3 days ago
3	had a code for a free wrap and the app wasn't ...	4 days ago
4	We have just gad a KFC which I have loved for ...	3 days ago
...	...	...
3995	AVOID GREENFORD KFC!!! The worst ever customer...	Updated May 6, 2017
3996	KFC Clifton Nottingham ran out of chicken. Aga...	May 6, 2017
3997	we went there at 8.30 pm ordered food paid for...	May 5, 2017
3998	I was surprised to see that KFC had a delivery...	May 4, 2017
3999	My disabled daughter always gets diarrhoea whe...	Updated May 1, 2017

[4000 rows x 2 columns]

Figure 6: Dataset of Scrapped Reviews of KFC

Above figures shows the scrapped data for KFC and McDonald's. These datasets consist of 4000 rows and 2 columns. Reviews present in the dataset also contains special characters and emojis, also the Timestamp column must be proper date to perform better data analysis. To remove these ambiguities in the datasets I preprocessed the dataset using NLTK. And classify the reviews as Positive or Negative, depending on the sentiment of the reviews. For sentiment classification I used Vader, it is an NLTK module that calculates sentiment ratings from the words that are used. It is a rule-based sentiment analyzer where phrases are often classified as positive or negative depending on their semantic orientation.

	Day	Cleaned_Reviews	Sentiment	brand
0	2023-11-20	thanks kfc marketing genius distorted view his...	0	kfc
1	2023-11-19	havent kfc disappointed quality however kfc bo...	1	kfc
2	2023-11-15	keep going back chicken good really shouldnt t...	1	kfc
3	2023-11-15	piece bucket fleet street torquay anorexic leg...	0	kfc
4	2023-11-14	placed orderapp kfc stanes park colchester rec...	0	kfc
...	...	...	...	...
7186	2021-09-18	every time order delivery receive order everyt...	1	mcdonald
7187	2021-09-18	mac donalds sthelens town centreoh word happen...	0	mcdonald
7188	2021-09-18	happened mcdonalds recently people incapable p...	0	mcdonald
7189	2021-09-18	regular customer mcdonalds abbey lane leiceste...	0	mcdonald
7190	2021-09-18	chirk mcdonaldschirk mcdonalds low hygiene sco...	0	mcdonald

7191 rows × 4 columns

Figure 7: Combined and Cleaned Dataset of KFC and McDonald's

After preprocessing the datasets, I combined them and saved in CSV format so that it can fed to the tableau for data visualizations.

Figure 8: Word Cloud of Combined Dataset

Above figure represents the world cloud of the combined dataset. A word cloud is a visual representation (image) of word data. In other words, it is a collection, or cluster, of words depicted in different sizes. The bigger and bolder the word appears, the more often it's mentioned within a given text and the more important it is.

Tableau:

Tableau is mostly used for sharing and analyzing information in business intelligence and data visualization applications. The Tableau set of solutions simplifies data visualization and sharing through desktop, public, web, server, and reader technologies. Tableau is chosen because it can create dynamic and intelligent dashboards with its visualization features. Its intuitive interface makes it easier to convert unprocessed data into aesthetically pleasing representations, giving stakeholders a thorough grasp of feelings.

To create data visualizations in tableau, first we connect tableau with a data source (combined dataset). Then different visualizations are created using different features of the dataset.

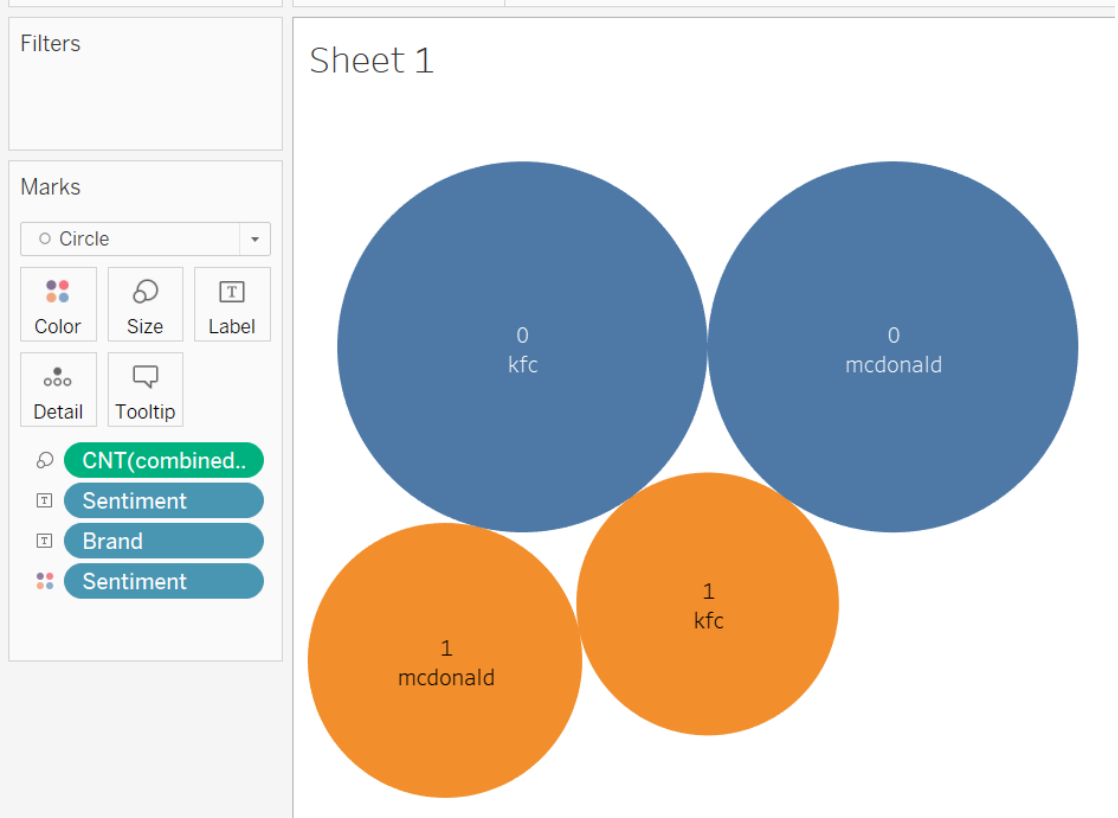


Figure 9: Graph of Positive and Negative Reviews in Dataset

Above figure shows the number of positive and negative reviews in the dataset for both companies. In this we can see that positive reviews for McDonald's are more than that of KFC. However, to balance the reviews of companies I have scrapped data of KFC from 2017 to 2023 and that of McDonald's from 2020 to 2023.

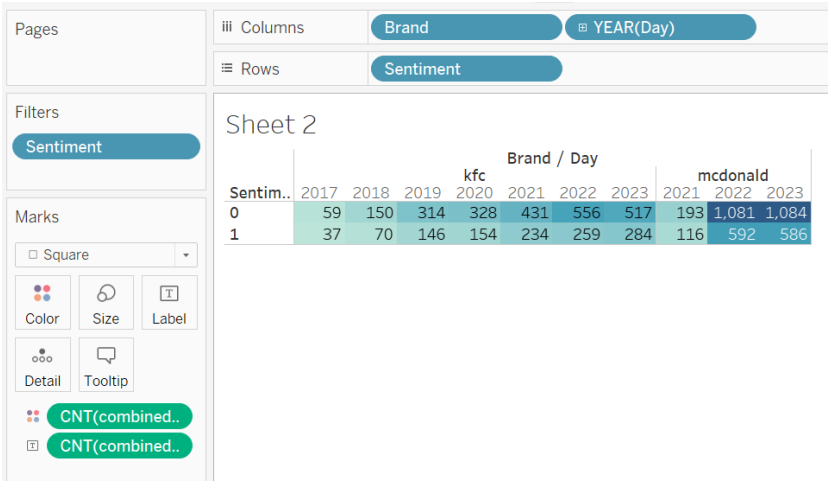


Figure 10: Table of Positive and Negative Reviews in Dataset

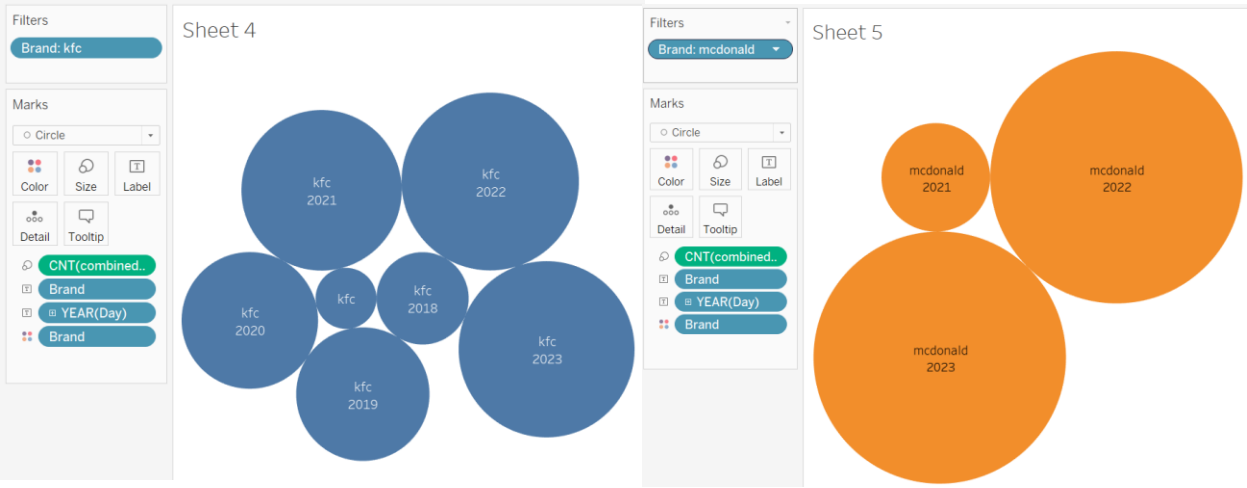
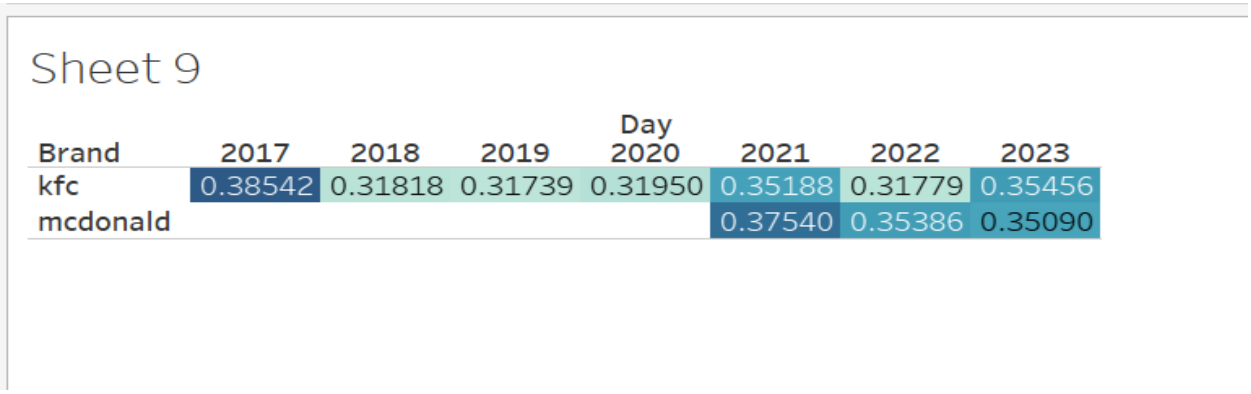


Figure 11: Reviews in each Year

Above figures shows the number of positive and negative for both companies in each year. In this we can observe the fluctuation in the sentiments of the public for these two companies. Ratio of the number of positive reviews for McDonald's decreases in the last year. However, for KFC it is increased. Following graph shows the line plot of the above table. From this result business owners can review the interest of public in these brands. They can improve their quality and marketing on the basis of this analysis.



Sheet 9

Brand	Day 2017	2018	2019	2020	2021	2022	2023
kfc	0.38542	0.31818	0.31739	0.31950	0.35188	0.31779	0.35456
mcdonald					0.37540	0.35386	0.35090

Figure 12: Table of Average Sentiment in each Year

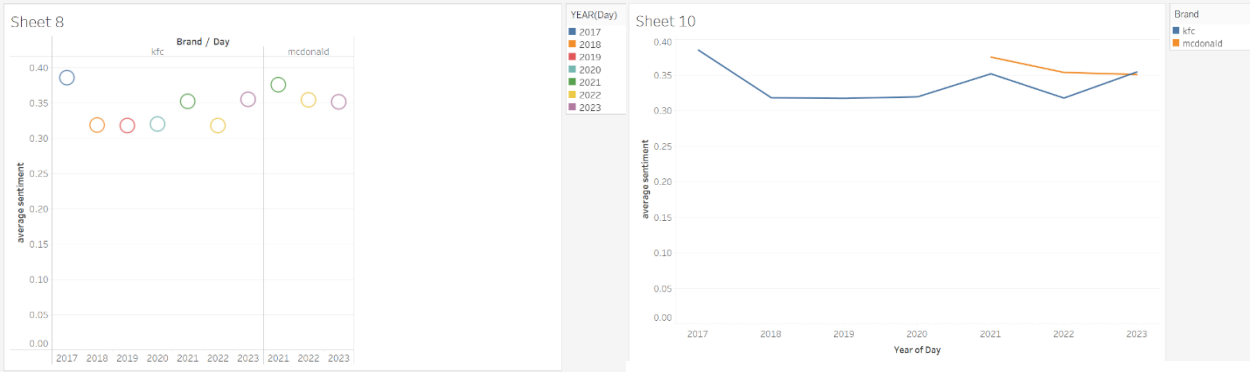


Figure 13: Average Sentiment in each Year

Above figures shows the average sentiment for each brand in each year. After year 2017, average rating of KFC decreases, but KFC tries to maintain it and pumped it back in 2023. However, in recent years the average customer rating for McDonald's is decreasing, this is an alert for the company to enhance the quality of their products.

Conclusion:

The method involves regularly scraping Trustpilot reviews from the internet using Data Miner. Following that, sentiment analysis is done using NLTK, which assigns a sentiment score to each review. Tableau visualizes the outcomes and offers stakeholders an interactive, user-friendly interface. The chosen technologies integrate well with one another to offer a seamless workflow that encompasses data extraction, processing, and visualization. The consistency of the dataset ensured by Trustpilot is strong and current. By combining Tableau's visualizations with NLTK's sentiment analysis, businesses may obtain a comprehensive understanding of customer sentiments and valuable insights.

In order to comprehend and present the intricate network of consumer opinions on Trustpilot, sentiment analysis techniques, data extraction tools, and visualization systems work together in a mutually beneficial manner.

Key Results:

Sentiment Distribution:

Businesses can determine the most common emotions among their clients by analyzing the overall sentiment distribution. With the use of this data, organizations can leverage positive sentiments and highlight their strengths in communication or use them as leverage in marketing activities. Additionally, it represents a favorable public opinion that can be used to support marketing campaigns or brand loyalty initiatives.

Top Positive and Negative Keywords:

Finding commonly occurring positive and negative phrases highlights particular elements that appeal to or worry about clients. To connect with customers, businesses might deliberately highlight these advantages in their branding and marketing campaigns. On the other hand, pinpointing negative phrases (such "slow service," "unpleasant experience") helps identify specific areas of pain for focused improvement, guiding programs for customer service training and operational improvements.

Trends in Sentiments:

Sentiment analysis over time reveals patterns and possible relationships with advertising campaigns or occasions. Because of this association, companies can better plan their marketing calendars so that they coincide with times when positive sentiment is at its peak. For example, maximizing the impact of positive sentiment peaks during product launches or promotional events might result in higher consumer engagement and sales.

Visualization:

Interactive Dashboards:

Stakeholders may dynamically investigate sentiments, keywords, and trends with interactive Tableau dashboards. By taking proactive measures to address developing patterns, stakeholders may transform insights into actions and promote a company environment that is more responsive and flexible. Interactive dashboards also make

real-time monitoring easier, allowing companies to quickly modify their tactics in reaction to shifting public opinion.

Word Clouds:

Finding visually arresting patterns enables companies to transform complicated data into insights that can be put to use. If a word cloud analysis indicates a significant emphasis on affirmative keywords associated with a specific product attribute, companies may choose to emphasize this characteristic in promotional materials or explore product extensions that correspond with consumer inclinations.

Figure 14: Word Cloud of Positive Reviews in Combined Dataset

Figure 15: Word Cloud of Negative Reviews in Combined Dataset

Word clouds provide a brief overview of recurrent themes by graphically representing the prominence of terms. Companies are able to spot visually arresting patterns, which helps them prioritize areas that need to be improved or celebrated.

Business Storytelling:

Customer Experiences:

Presenting good feedback and success stories draws attention to positive client experiences. Building brand trust through the development of tales centered around pleasant experiences may turn happy consumers into brand evangelists. To reinforce pleasant feelings and build a positive brand image, these stories can be used into marketing campaigns, social media posts, and consumer communications.

Improvement:

Transparently addressing unfavorable opinions shows a dedication to progress. Building authenticity through acknowledging and resolving difficulties shows that you are responsive to client issues. Companies have the ability to express their commitment to customer satisfaction, which may transform unfavorable opinions into chances to demonstrate resiliency and a commitment to progress.

Strategic Recommendations:

obtaining information that can be put to use in the form of targeted marketing campaigns or improved products. Providing strategic advice translates insights into observable business outcomes and offers a clear road map for improving customer happiness. These suggestions could be for new products, focused marketing initiatives, or operational changes that suit consumer preferences and support long-term company success.

Anticipated Research Impact:

This research is expected to have an influence that goes beyond data visualization, storytelling, and analysis. This research aims to have a significant impact on corporate practices and plans by utilizing advanced methodologies to decode client attitudes and

providing practical insights. It is expected to have a variety of effects, from short-term tactical modifications to broad strategic changes. Businesses can use the research's dynamic toolkit to actively respond to customer views and understand them better. Based on the insights obtained from sentiment analysis and visualizations, this reaction mechanism has the capacity to improve brand loyalty, optimize operational efficiency, and support long-term sustainability. Additionally, the study seeks to improve brand reputation management by giving companies the power to strategically alter public opinion through narrative. In the end, the expected effect entails a journey of transformation for companies, cultivating a customer-centric mindset that transcends sentiment analysis to actively sculpting favorable customer experiences and creating enduring bonds with their target market.

Conclusions:

To sum up, this study project delves deeply into the realm of client sentiments, analyzing the nuances of online evaluations found on Trustpilot for KFC and McDonald's. Together, the business storytelling, significant facts, and visualizations provide a sophisticated understanding of consumer experiences. Favorable attitudes, popular terms, and time patterns offer useful information that companies may use to improve their tactics and cultivate client loyalty. Agile decision-making is facilitated by the interactive dashboards and word clouds, which are effective tools for condensing complex data into visually appealing representations. Businesses can get a competitive edge by using rival comparison assessments to optimize their market positioning. The narratives' emphasis on good customer experiences serves as a foundation for proactive brand perception management in addition to reaffirming brand trust. This study not only provides a response to the question "So What?" but also lays out a revolutionary course for companies looking to adopt a customer-centric strategy.

Limitations:

Even while this research offers insightful information, it is important to recognize its limits. The study only uses data from Trustpilot; opinions shared on other platforms are not taken into account. Despite its robustness, the sentiment analysis model might not

fully represent the complexity of human emotions, which could occasionally result in errors. Furthermore, the research's reach is limited by the data at hand and might not fully represent all consumer experiences. It is advised that the sentiment analysis model be continuously validated and improved in order to gradually increase its accuracy. Additionally, the platform's regulations and future modifications may have an impact on the Trustpilot API's dependability and the ability to retrieve real-time data.

Recommendations:

A number of proposals for further study and real-world implementations are made in light of the findings and constraints. First off, a more complete picture of sentiments would be obtained by broadening the scope of data sources beyond Trustpilot to encompass a wider range of consumer feedback sites. The accuracy and adaptability of the sentiment analysis model can be improved with regular updates and improvements that use machine learning techniques. Deeper insights may be revealed by examining sentiment connections with outside variables like marketing campaigns or trade shows. Companies are advised to use the research's conclusions to their CRM plans, utilizing the knowledge gained to customize interactions and anticipate client issues. The relevance of strategies is ensured over time by regular changes to the study and continuous monitoring of internet sentiments. Lastly, building an organization's customer-centric culture based on the knowledge gained from this study helps provide the groundwork for long-term success in the fast-food sector.

In closing, this research acknowledges its limits but also provides a vital roadmap for organizations to effectively navigate the complicated landscape of consumer feelings and achieve significant outcomes. It also opens opportunities for future endeavors and practical applications.