

A Project Report on

**Understanding of Complaints and Praises of Woohoo Gift card – Google Reviews**

Submitted in partial fulfilment for award of degree of

**PGDM**

In **Business Analytics**

Submitted by

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Under the Guidance of

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**<Month, Year>**



# Candidate’s Declaration

I, HARSHA GV hereby declare that I have completed the project work towards the first year of Master of Business Administration in Business Analytics at, REVA University on the topic entitled “Understanding of Complaints and Praises of “Woohoo Gift card” – Google Reviews” under the supervision of Jay B.SIMHA and designation. This report embodies the original work done by me in partial fulfilment of the requirements for the award of degree for the academic year 2021.

Place: Bengaluru Name of the Student:

HARSHA GV

Date: Signature of Student



# Certificate

This is to Certify that the Project work entitled “Understanding of Complaints and Praises of “Woohoo Gift card” – Google Reviews” carried out by HARSHA GV with R19MBA83, is a bonafide student of REVA University, is submitting the first year project report in fulfilment for the award of PGDM in Business Analytics during the academic year 2021. The Project report has been tested for plagiarism, and has passed the plagiarism test with the similarity score less than 15%. The project report has been approved as it satisfies the academic requirements in respect of PROJECT work prescribed for the said Degree.

Signature of the Guide Signature of the Director

Name of the Guide Jay B.Simha Name of the Director Shinu

Guide Director

External Viva

Names of the Examiners

1. <Name> <Designation> <Signature>
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Place: Bengaluru

Date:



# Acknowledgement

Please acknowledge the role of your mentors, trainers, classmates, program office members, family and friends who have directly and indirectly supported you in this work.

Please acknowledge the support provided by Hon’ble Chancellor, Dr. P Shayma Raju, Hon’ble Vice Chancellor, Dr. M. Dhanamjaya, and Registrar, Dr. N. Ramesh, as a standard protocol.

Place: Bengaluru

Date:



# Similarity Index Report

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Director, Corporate Training

# List of Abbreviations

|  |  |  |
| --- | --- | --- |
| **Sl. No** | **Abbreviation** | **Long Form** |
| 1 | LSTM | Long short-term Memory |
| 2 | GRU | Gated Recurrent Unit |

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# Abstract

(Not to exceed 1-2 pages)

The Abstract is an important part of the report. It is a succinct summary of the longer report that allows the reader to quickly become familiar with the work described in the report without having to read it all. It briefly advises the reader of the problem, background information include the strategic importance of the problem, concise analysis of the problem, and the primary conclusions and recommendations. Search friendly key words to be mentioned.

**\*CRITICAL:** Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract.

Keywords: Text Mining, Sentiment Analysis, Natural Language Processing

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# Chapter 1: Introduction

Introduction to industry

Gift cards, also known as gift certificates, gift vouchers, or gift tokens, are generally issued by a retailer or bank. In addition, gift cards are used as a developmental strategy for promoting businesses, attract new customers, increase brand awareness, reduce fraud, and improve business sales. Moreover, a gift card can be utilized as an alternative source for money at a particular store or business store for purchases related to goods or services.

Area of your work – Woohoo Gift Card India \_ Google reviews

Company “Qwikcilver solutions Pvt Ltd” brand Woohoo gift card has more than 90 -95% Market share in India, the Indian market is expected to grow to 9.34Billion by 2024. and Global industry is expected to grow by 2076 Billion by 2027.

The need for study of google reviews given for the Woohoo Gift card application in the google app store. As the brand is the number one Gift card application in India, Even though it has been in India for more than 10 Years, Still the consumers have not fully aware of the brand or concept of digital and physical gift cards. To cater to the customers better and grow faster we want to analyze the google reviews.

The scope of the study is to use the Woohoo google reviews to do Text analysis and understand the Customer sentiment complaints and praises.

In the Text analysis, we are using social media and data available in the public domain to helps us understand the customer behavior, expectations, needs, and where the brand is failing to fulfill.

The study will help the organization and the gift card industry to understand from the sentiment analysis what are the factors that drive customers to buy the product, be loyal or move away from the brand due to bad delivery of service.

Sentiment analysis research is very effective in predicting positive and negative polarity ratings at different granularity at the word count used, length review written, product features performance over a period of time.

**1.1 Topic Heading**

Understanding of Complaints and Praises of “Woohoo Gift card” – Google Reviews.

**1.1.1 Sub Topic Heading**

You can write the statements here related to the sub-topic within the major topic.

**1.1.2 Equations**

Punctuate equations with commas or periods when they are part of a sentence, as in:

*a**b* 

**1.2 Figures and Tables**

This section describes how to place and define figures and tables.

**1.2.1 Figures**

Figures must be clearly visible and must be aligned in centre. Figure captions should be below the figures.

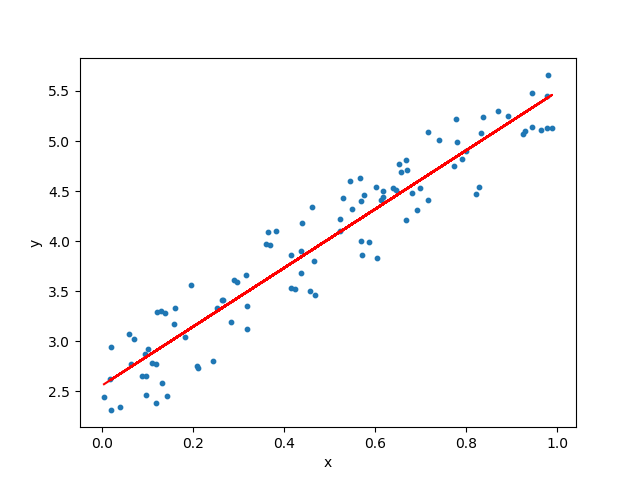


Fig 1.1: Simple Linear Regression

**1.2.2 Tables**

Tables must be aligned in centre.

Table 1.1: Table Name

| Table Head | Table Column Head | | |
| --- | --- | --- | --- |
| Table column subhead | Subhead | Subhead |
| copy | More table copya |  |  |

# Chapter 2: Literature Review

We have referred the Linguistic Understanding of Complaints and Praises in User Reviews,

written by Kavitha Ganeshan, the summary of this Literature is categorizes positive and negative review sentences into 4 categories: positive only, praise, negative only and complaint. The intuition is that praise sentences and complaints tend to be more informative than plain positive only or negative only sentences. This paper thus tries to understand the properties of such text that we consider as complaints and praises. The analysis shows several interesting findings including:

complaints tend to have more past tense than the other 3 categories. complaints and praises are generally longer and contain more nouns than positive only or negative only sentences.

praise sentences tend to use more adjectives than other types of sentences.

1. In the paper they defined the Negative only, Complaint, Positive only and Praises.
2. For the defined sentiments they have shown the Avg# of words, and Avg# length Analysis.
3. Noun and adjective usage: For example, a negative only sentence such as ‘the screen is bad’ or a complaint such as ‘the screen is not clear’ both have nouns (‘screen’) and adjectives (‘bad’ and ‘clear’). Both the noun and adjectives play a role in indicating negative sentiment.
4. Paste tense analysis: By each sentiment count of Past tense words used.
5. Negation analysis: For example, consider the negation in the following sentence: this lasts all night and feels really great on my skin not oily cakey or heavy”.
6. Intensifier usage: For example, to express appreciation on some restaurant service one may say ‘The service was extremely fast and the food was super delicious!’.

title=Linguistic Understanding of Complaints and Praises in User Reviews, author=Ganesan, Kavita and Zhou, Guangyu, booktitle= Proceedings of NAACL-HLT, pages=109--114, year=2016.

In relation to our project , we have done the Woohoo gift card Google reviews to unsderstand the Sentiments , Avg #of words , Avg # of Length and compare the sentiments with product features . To help the management to work towards improving the product service and delight the customers.

# Chapter 3: Problem Statement

The gift card industry is available in India for more than a decade. But the product is yet to be completely accepted by customers. In order to serve the customers better and understand the concern areas. We want to analyse the customer complaints and Praises using the Google reviews given by customers for the past 7 years.

For a product to perform and meet the Expected/promised service from the beginning purchase to end service redeem of a gift card needs to be provided, there is multiple factors end-to-end work.

The problem is worth the study as it can help the existing as well any other Gift card companies on how to run the business ensuring that the customer's expectations/needs are met and kept high. Do and Don’ts to delight the customer. This would help in attract, retain and grow customers by working towards improving the customer journey and delivery process.

# Chapter 4: Objectives of the Study

The purpose of the capstone project is to understand the Customers Sentiments towards complaints, Negative only, Positive only and praises and the This would help in attract, retain and grow customers by working towards improving the customer journey and delivery process.

Goals are listed below.

1. Text Cleaning.
2. Self-Evaluate the Reviews to understand the sentiment.
3. Selecting the best lexicon which give better results.
4. Test the lexicon with Naive Bayesian models.
5. Identify the complaints and Praises to generate insights
6. Identifying the product features which is good and not good.
7. Compare the Sentiments with Product features over the period of time to derive insights.

Future scope of study which is not part of the Current project.

1. Negation handling.
2. N-grams (unigram, bigram, trigrams).
3. Noun and Adjective Usage.
4. Paste tense analysis
5. Intensifier Usage
6. Taking reviews and comments from other social media platforms Facebook and twitter.

# Chapter 5: Project Methodology

Please find below the methodology of the process that we have used to conduct the project.



Fig 5.1: Methodology work flow

The tools used for this project for solving the problem in analyzing the sentiment mentioned below.

1. Python tool for cleaning the data, implement the Lexicon sentiments and Build Naive Bayesian Model.
2. MS Excel for reviewing, doing data review, count sentiment, word count, review length count, trend analysis and for coding the Product features.

Problems faced while I was trying to do the NRC lexicon for all the emotions, I was not able to get the output using the one NRC lexicon input file. In order to resolve this problem, created multiple files for each emotion in order to get the Sentiment output.

At the end of the process, we will able to give insights/ recommendations for the Organization to improve the product delivery services.

# Chapter 6: Business Understanding

Gift Card industry complete process... to understand the business explained below

1. Many of Retail companies want to promote their brand and increase sales, in order to do this, they contact the gift card company.
2. Gift card once sold to the Customers. Customers will be purchasing the final product and use the gift card in online purchases and offline stores.
3. In the Gift card, there are 2 types Retail Gift cards and promotional.
4. Retail Gift: This is a Gift card that the customers purchase by buying the complete price. Example 1000 Rs gift card customer can purchase any product worth 1000 Rs.
5. Promotional: Giving the promotional gift card which has an offer through we can the product at a discounted price, in some cases the discount is allowed based on the Fixed Benchmark price. Example: 200Rs promotional Gift card can be used on the purchase of 2000 Rs worth of the product.
6. The company licensed from the RBI are authorised to issue Gift cards.
7. Similar to any credit/debit card every merchant Brand has unique numbers are provided so that the Gift card functions as per the client requirements and T&C.
8. In the Gift card, we have Activation, Redemption, refund, and validity extension of the gift card.
9. Customers use Web portal / App to log in to purchase the Retail Gift card / promotional Gift card
10. Once purchased, It can be used sent to yourself, friends, and others through SMS, Mail.
11. Customers who post validation and Login to the portal can claim the Gift card.
12. In order to Redeem/use the gift card, the Gift card PIN needs to be used to authorizing the Merchant to use the Gift card money to purchase the product.
13. Every gift card has a validity duration, post this it will be expired and cannot be used.
14. In case the Brand agrees or customer requests (approved by the brand) the Gift card validity will be extended.
15. The Terms and Conditions of each gift card are based on the Brand requirement.
16. The customers like the Gift card because of the following reasons.
17. They have access to a wide variety of brands to choose from.
18. It gives them good discounts, promotional offers.
19. Gift people with Ecard / physical gift card instead of giving physical cash.
20. Based on customer convenience the card can be used online and offline stores.
21. We can store all the Gift cards in one place.
22. Having multiple payment gateways, we are able to purchase the product.
23. Faster processing and delivery of service using the latest technology is the key to success.
24. Easy to use across the age group attracts the customers.

As per business understanding we have identified the product features. This would help us to determine if the company is providing better services to the customers.

We have gone through every 2872 reviews and marked them based on the

Feedback provided by the customers on how they Perceive towards the brand Good, not good on the product features

|  |  |  |
| --- | --- | --- |
| **#** | **Product features** | **Details - Based on which we have grouped.** |
| 1 | Customer Support not good | Customer Support / Chat Support Service/ Awaiting Response/Help me issues |
| 2 | Delivery of service not good | Delivery Service Issues / Receiving, Activation, Redeem, Refund, OTP |
| 3 | App/ Web Issues | Web App Issues / Login / UI / How to use/ App Issues |
| 4 | Payment Issues | Payment Issues / Add other Payment Brands |
| 5 | Promotion/offers Issues | Promotional offer Issues / less offers / Cashbacks / Add brands |
| 6 | Validity Issues | Validity Issues |
| 7 | Not Trusting the Brand | Un trustable / Frauds/Waste /Cheat / Fake/ not good /Scam |
| 8 | Speed of delivery good | Faster buying process |
| 9 | App/ Web good | Web App Good/ Nice /Great / Awesome |
| 10 | Promotion/offers good | Best Offers Deals / Discounts |
| 11 | Price is good | Price is good / Save Money |
| 12 | Customer Support good | Customer Service is good |
| 13 | Easy to use | Easy to Use |
| 14 | Multiple Brands to choose good | Buy Wide range of brands |
| 15 | Delivery of service good | Delivery service is Good |
| 16 | Payment Good | Easy Payment / Multiple Payment modes |

The business value of embarking on this project, the more than complaints are reduced and increased Positive only and praises the company will gain loyal customers, improved efficiency in the delivery process less delay. 10% Increase in overall revenue.

# Chapter 7: Data Understanding

We have extracted the data from the Google reviews for the Woohoo gift card App for the past 7 years data. Containing year , Rating (1-5scale), “Sentiment” variable we have coded as Positive or Negative sentiment post reading the review and “Review” given by the customers..

We have 2782 records.

Sample Data.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rating** | **Year** | **Sentiment** | **Review** |
| 1 | 2021 | Negative | ##10103920## case I'd Worst poor customer service they are not giving any response after 4 day's of register complaint. They call me but disconnected the call without giving any proper answer. Now I have not any way to reach customer support so I tried this.... I will never change my review..... |
| 2 | 2021 | Negative | This app is waste of time because there not give a google gift card .i will use a many time but yesterday not buy gift card of google play store please solve the problem fastly |
| 3 | 2021 | Positive | it is a good app but once i had took 10rs redeem which was not work and after complaining about that issue woohoo gave me some link which was very long procedure which i dint understand what to do likely it is good as i had redeem 30rs redeem code successfully |
| 4 | 2021 | Positive | This is good app. But the app requires more features and add more technology latest updates and introductory cash back offers and discounts and more gift cards for more occasions tie up with online ecommerce websites and app . Immediately implement. |
| 5 | 2021 | Positive | A most brilliant concept. It's the time to say no to physical gifts. Go for digital gifts. Woohoo is the best in that. |

# Chapter 8: Data Preparation

1. We have extracted the data from the Goole review for the Woohoo Gift card from the google app store.
2. Extracting the data collecting the review given by customers, the year of review and rating
3. Going through the review, we have done the self-evaluation and code the positive and negative reviews.
4. Load the data into python and doing the preliminary analysis
5. We have 2782 Records
6. There are Zero Missing values in the data
7. In the review’s sentiment (we have self-coded the sentiment) we have 59% Positive and 41% Negative

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Self Evaluate | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
| Negative | 442 | 94 | 94 | 127 | 95 | 164 | 133 | 1149 |
| Positive | 550 | 127 | 60 | 101 | 91 | 378 | 326 | 1633 |
| Grand Total | 992 | 221 | 154 | 228 | 186 | 542 | 459 | 2782 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Self-Evaluate % | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
| Negative | 45% | 43% | 61% | 56% | 51% | 30% | 29% | 41% |
| Positive | 55% | 57% | 39% | 44% | 49% | 70% | 71% | 59% |
|  |  |  |  |  |  |  |  |  |
| Total Users reviewers % | 36% | 8% | 6% | 8% | 7% | 19% | 16% | 100 |

* 1. In the Year 2021 the company has the highest Positive Rating compared to previous year. But when we aggregate it has only 16% Reviewers of the total 7 years data.
  2. In the self-evaluate overall we have 59% positive and 41% Negative

1. Cleaning the data by the below process.
   1. Removing special characters, punctuation, square bracket, numbers, double spacing.
   2. Convert all the upper case to lower case.
   3. Tokenization: Tokenization is the act of breaking up a sequence of strings into pieces such as words, keywords, phrases, symbols and other elements called tokens. We have Created the tokens in a separate column in the data frame.
   4. Stop Words removal: - A stop word is a commonly used word (such as “the”, “a”, “an”, “in”) that a search engine has been programmed to ignore, both when indexing entries for searching and when retrieving them as the result of a search query. Post tokenization we have removed the stop words.
   5. Stemming and Lemmatization: - Stemming and lemmatization are methods used by search engines and chatbots to analyse the meaning behind a word. Stemming uses the stem of the word example: “Flying” is a word and its suffix is “ing”, if we remove “ing” from “Flying” then we will get base word or root word which is “Fly”.

lemmatization uses the context in which the word is being used. example, runs, running, ran are all forms of the word run, therefore run is the lemma of all these words

1. Sentiment analysis using the lexicons
   1. NRC Lexicon Sentiment analysis: (The National Research Council Canada's (NRC) Emotion Lexicon

In the NRC lexicon we are able to understand the emotional side of the reviews along with positive and negative sentiments.

Positive, negative, anger, anticipation, disgust, fear, joy, sadness, surprise and trust.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | positive | negative | anger | anticipation | disgust | fear | joy | sadness | surprise | trust |
| 2015 | 641 | 362 | 175 | 502 | 151 | 144 | 444 | 184 | 344 | 495 |
| 2016 | 149 | 62 | 43 | 109 | 31 | 31 | 110 | 36 | 96 | 101 |
| 2017 | 96 | 68 | 45 | 73 | 28 | 23 | 75 | 28 | 66 | 80 |
| 2018 | 144 | 85 | 50 | 126 | 32 | 38 | 113 | 45 | 99 | 100 |
| 2019 | 131 | 60 | 32 | 106 | 31 | 30 | 100 | 39 | 88 | 83 |
| 2020 | 374 | 123 | 67 | 298 | 51 | 53 | 317 | 68 | 268 | 281 |
| 2021 | 291 | 107 | 65 | 237 | 33 | 60 | 241 | 55 | 201 | 197 |
| Total | 1826 | 867 | 477 | 1451 | 357 | 379 | 1400 | 455 | 1162 | 1337 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | positive | negative | anger | anticipation | disgust | fear | joy | sadness | surprise | trust |
| 2015 | 65% | 36% | 18% | 51% | 15% | 15% | 45% | 19% | 35% | 50% |
| 2016 | 67% | 28% | 19% | 49% | 14% | 14% | 50% | 16% | 43% | 46% |
| 2017 | 62% | 44% | 29% | 47% | 18% | 15% | 49% | 18% | 43% | 52% |
| 2018 | 63% | 37% | 22% | 55% | 14% | 17% | 50% | 20% | 43% | 44% |
| 2019 | 70% | 32% | 17% | 57% | 17% | 16% | 54% | 21% | 47% | 45% |
| 2020 | 69% | 23% | 12% | 55% | 9% | 10% | 58% | 13% | 49% | 52% |
| 2021 | 63% | 23% | 14% | 52% | 7% | 13% | 53% | 12% | 44% | 43% |
| Total | 66% | 31% | 17% | 52% | 13% | 14% | 50% | 16% | 42% | 48% |

In the Year 2020 and 2021 the company has the reduced the Negative Rating to 23% compared to previous year .

Anticipation, joy, Surprise trust have got the highest rating of 42-52%, were as the anger , disgust and sadness is 14- 17% which we need to addressed by the company.

In the NRC overall we have 66% positive and 31% Negative.

* 1. Vader Lexicon Sentiment analysis (Valence Aware Dictionary and sentiment Reasoner) Emotion Lexicon

In the Vader sentiment analysis, we are able to understand the Positive and negative sentiment.

Initially we get the output for each review Negative, Positive, Neutral and Compound scores.

Any review with compound score less than zero is marked as negative and greater than or equal to zero as Positive.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| VSentiment | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
| Negative | 226 | 38 | 40 | 60 | 51 | 76 | 56 | 547 |
| Positive | 766 | 183 | 114 | 168 | 135 | 466 | 403 | 2235 |
| Total | 992 | 221 | 154 | 228 | 186 | 542 | 459 | 2782 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| VSentiment | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
| Negative | 23% | 17% | 26% | 26% | 27% | 14% | 12% | 20% |
| Positive | 77% | 83% | 74% | 74% | 73% | 86% | 88% | 80% |
|  |  |  |  |  |  |  |  |  |
| Total Reviewers % | 36% | 8% | 6% | 8% | 7% | 19% | 16% | 100% |

Negative reviews have been reducing to 12% and Positive reviews is increasing to 88% over the past years. Year on year we can observe the customer having positive opinion about the product / service.

In the Vader S overall we have 80% positive and 20% Negative.

* 1. Comparison of Self-evaluate , NRC and Vader Sentiments

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Self Evaluate** | | **NRC Sentiment** | | **Vader Sentiment** | |  |
| Sentiment | Negative | Positive | Negative | Positive | Negative | Positive | Total |
| 2015 | 442 | 550 | 362 | 641 | 226 | 766 | 992 |
| 2016 | 94 | 127 | 62 | 149 | 38 | 183 | 221 |
| 2017 | 94 | 60 | 68 | 96 | 40 | 114 | 154 |
| 2018 | 127 | 101 | 85 | 144 | 60 | 168 | 228 |
| 2019 | 95 | 91 | 60 | 131 | 51 | 135 | 186 |
| 2020 | 164 | 378 | 123 | 374 | 76 | 466 | 542 |
| 2021 | 133 | 326 | 107 | 291 | 56 | 403 | 459 |
| Total | 1149 | 1633 | 867 | 1826 | 547 | 2235 | 2782 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Self Evaluate** | | **NRC Sentiment** | | **Vader Sentiment** | |  |
| Sentiment | Negative | Positive | Negative | Positive | Negative | Positive | Total |
| 2015 | 45% | 55% | 36% | 65% | 23% | 77% | 992 |
| 2016 | 43% | 57% | 28% | 67% | 17% | 83% | 221 |
| 2017 | 61% | 39% | 44% | 62% | 26% | 74% | 154 |
| 2018 | 56% | 44% | 37% | 63% | 26% | 74% | 228 |
| 2019 | 51% | 49% | 32% | 70% | 27% | 73% | 186 |
| 2020 | 30% | 70% | 23% | 69% | 14% | 86% | 542 |
| 2021 | 29% | 71% | 23% | 63% | 12% | 88% | 459 |
| Total | 41% | 59% | 31% | 66% | 20% | 80% | 2782 |

When we compare the 3 sentiments- NRC 66% and Vader Sentiment 80% is giving higher Positive scores compared to self-evaluate .

* 1. Cross Tab. Self-evaluate with NRC

|  |  |  |  |
| --- | --- | --- | --- |
| Sentiment | NRC Sentiment | | |
| Self-Evaluate | positive | negative | Total |
| Negative | 771 | 721 | 1149 |
| Positive | 1055 | 146 | 1633 |
| Total | 1826 | 867 | 2782 |

|  |  |  |  |
| --- | --- | --- | --- |
| Sentiment | NRC Sentiment | | |
| Self-Evaluate | positive | negative | Total |
| Negative | 67% | 63% | 41% |
| Positive | 65% | 9% | 59% |
| Total | 66% | 31% |  |

In the NRC Sentiment , we are rating both the Positive and negative sentiment and tracking separately.

Negative Self evaluate was 41 % , and the NRC was able to find Better Negative reviews with 63 % . But overall the reviews had both negative and positive reviews more than 63%.

This means customers who have negative opinion, also have given positive reviews.

Positive Self evaluate was 59 % , and the NRC was able to find Better Positive reviews with 65 % difference of 6%. Among the 59 % positive NRC was able to find 9 % negative sentiment Area for improvement for the company.

In the below table we have grouped the data based on No positive and negative , Both Positive and negative , Only Negative and Only Positive.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Row Labels | No Positive & Negative | Both Positive and negative | Only Negative | Only Positive | Grand Total |
| Negative | 148 | 491 | 230 | 280 | 1149 |
| Positive | 550 | 118 | 28 | 937 | 1633 |
| Grand Total | 698 | 609 | 258 | 1217 | 2782 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Row Labels | No Positive & Negative | Both Positive and negative | Only Negative | Only Positive | Total |
| Negative | 13% | 43% | 20% | 24% | 41% |
| Positive | 34% | 7% | 2% | 57% | 59% |
| Total | 25% | 22% | 9% | 44% |  |

The table shows that if there is any overlap between the sentiments and no sentiment.

Of the 59 % positive sentiment, NRC Was able to find only Positive sentiment of 57 % and 34 % of the records where not having any positive or negative sentiments.

On the other hand, 41 % of negative 43 % of the respondent reviews has both positive and negatively coded.

NRC Sentiment is able to predict better to our self-evaluate sentiment.

* 1. Cross Tab. Self-evaluate with Vader Sentiment

|  |  |  |  |
| --- | --- | --- | --- |
| Sentiment | Vader Sentiment | | |
| Self-Evaluate | Positive | Negative | Grand Total |
| Negative | 614 | 535 | 1149 |
| Positive | 1621 | 12 | 1633 |
| Grand Total | 2235 | 547 | 2782 |

|  |  |  |  |
| --- | --- | --- | --- |
| Sentiment | Vader Sentiment | | |
| Self Evaluate | Positive | Negative | Total |
| Negative | 53% | 47% | 41% |
| Positive | 99% | 1% | 59% |
| Grand Total | 80% | 20% |  |

As in the Vader Sentiment, From the compounding scores (Neg, Neu, Pos), we have rated > 0 as positive and <0 as negative.

Negative Self evaluate was 41 %, and the Vader S was able to find around 47% only Negative reviews and 53 % marked as positive.

Vader S is able to identify 47 % Negative scores,

Positive Self evaluate was 59 %, and the Vader S was able to find Better more accurately Positive reviews with 99 % accuracy. Among the 59 % positive NRC was able to find 1 % negative sentiment.

* 1. Conclusion on Lexicon Sentiment
* Post comparing the NRC and Vader sentiment analysis, we observed that we get better results in Vader Lexicon sentiment 99% Positive Reviews mapped correctly. When compared with NRC it was only 65 %.
* In the next step we will validate from the Naive Bayesian model Count vectorizer and TFIDF vectorizer models does the Sentiments coded by lexicon is giving good results in predicting the outcome.

# Chapter 9: Data Modeling

(3-4 pages)

Based on the hypothesis and business objectives set, you need to identify the right modelling techniques and their parameters. You may use a set of predictive, machine learning models. The dataset could be divided into “train and test” to run the models. This section needs to clearly mention the procedure followed in model building.

As we have concluded the Vader sentiment gives better results, now we are validating this we 2 Models (1. **Naive Bayesian - Bag of Words (BoW) using Count Vectorizer** 2. **Naive Bayesian - Bag of Words (BoW) using TF-IDF Vectorizer** ) and select the best which gives better accuracy results.

As a first step we are splitting the data to train and test 70 /30 split , so that we an train the model and apply on the test data to get the accuracy of the model.

1. **Naive Bayesian - Bag of Words (BoW) using Count Vectorizer**

 A **bag**-**of**-**words** model, or BoW for short, is a way **of** extracting features from text for use in modelling.

**Count Vectorizer** It is used to transform a given text into a vector on the basis of the frequency (count) of each word that occurs in the entire text.

Using the Vader Lexicon sentiment we are looking at the Naive Bayesian - Bag of Words (BoW) using Count Vectorizer, , In order to efficiently predict the sentiment using the 70 Train and 30 test split and evaluating the accuracy of the model.

Below is the test data model result

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Naive Bayesian - Bag of Words (BoW)** | precision | recall | f1-score | support |
|  |  |  |  |
| **Negative** | 63% | 84% | 72% | 152 |
| **Positive** | 96% | 89% | 92% | 683 |
|  |  |  |  |  |
| **accuracy** |  |  | 88% | 835 |

* For the Train data set model accuracy, we got 88%.
* For the test data set also we got 88% accuracy,
* Positive Sentiment Precision of 96%, Recall of 89 % and F1 score 92% for the.
* Negative sentiment the precision was only 63%, recall 84% and F1 score 72 %.

Conclusion : We need to have better Negative Sentiment Precision.

1. **Naive Bayesian - Bag of Words (BoW) using TF-IDF Vectorizer**

 A **bag**-**of**-**words** model, or BoW for short, is a way **of** extracting features from text for use in modelling.

**TF-IDF** is a statistical measure that evaluates how relevant a word is to a document in a collection of documents. This is done by multiplying two metrics: how many times a word appears in a document, and the inverse document frequency of the word across a set of documents.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | precision | recall | f1-score | support |
| **Negative** | 72% | 68% | 70% | 152 |
| **Positive** | 93% | 94% | 93% | 683 |
|  |  |  |  |  |
| **accuracy** |  |  | 89% | 835 |

Using the Vader Lexicon sentiment we are using at the Naive Bayesian - Bag of Words (BoW) using TF-IDF Vectorizer, In order to efficiently predict the sentiment using the 70 Train and 30 test split and evaluating the accuracy of the model.

* For the Train data set model accuracy we got 89%.
* For the test data set also we got 89% accuracy,
* Positive Sentiment Precision of 93% , Recall of 94 % and F1 score 93% for the.
* Negative sentiment the precision was only 72% ,recall 68%% and F1 score 70 %.

Conclusion :- TFIDF Model is able to predict the Positive and negative sentiment better than count vectorizer Model as there is increase in model accuracy by 1 % and Negative sentiment Precision has increased by 9% .

# Chapter 10: Data Evaluation

As the TFIDF Model is giving better results we are using the vader sentiment lexicon sentiment for further analysis and create 4 category Negative only, Complaints , Positive only and praises.

**Analysing Complaints and Praises**

|  |  |  |
| --- | --- | --- |
| Category | Reviews | Reviews % |
| Negative only | 273 | 10% |
| Complaints | 274 | 10% |
| Positive Only | 1895 | 68% |
| Praise | 340 | 12% |
| Total | 2782 | 100% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Row Labels | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Negative only | 12% | 10% | 15% | 12% | 13% | 6% | 5% |
| Complaint | 11% | 7% | 11% | 14% | 14% | 8% | 7% |
| Positive Only | 65% | 70% | 57% | 57% | 61% | 78% | 74% |
| Praise | 12% | 13% | 17% | 17% | 11% | 8% | 14% |

From The 547 negative reviews Identified by Vader lexicon sentiment , we have segregated into 4 categories Complaints, Negative only , Positive only and Praise.

1) “Complaints” with 10 % is having Negative High score followed by mix of Positive scores & Neutral scores.

2) “Negative only” with 10 % is having only Negative score and neutral scores.

3) “Positive only” 68 % is having Positive High score followed by mix of Negative scores & Neutral scores.

4) “Praise” 12% is having only Positive score and neutral scores.

Conclusion:

Overall: -Majority of the reviews are towards “Positive only” which is good, but the company has to work towards converting the Praise 12% to “positive only” , followed by the negative reviews 20%.

2021:- Over the past 6 years the company has been able to improve the scores for “Positive only” for 2021 with 74% , and improved the praise to 14% and reduced the negative reviews.

**Analysing Complaints and Praises – Words and Length**

|  |  |  |
| --- | --- | --- |
| category | **Average Reviews word count** | **Average of Reviews Length** |
| Negative only | 11.84 | 63.52 |
| Complaint | 28.92 | 160.72 |
| Positive Only | 9.85 | 52.71 |
| Praise | 32.32 | 174.45 |
| Grand Total | 14.67 | 79.29 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Average of Actual words count** |  |  |  |  |  |  |  |
| Row Labels | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Negative only | 14.1 | 12.3 | 7.7 | 9.7 | 9.4 | 9.1 | 12.6 |
| Complaint | 29.8 | 28.5 | 24.9 | 25.9 | 26.2 | 29.5 | 32.9 |
| Positive Only | 10.5 | 11.2 | 10.2 | 7.9 | 7.2 | 9.6 | 9.8 |
| Praise | 32.7 | 37.5 | 39.8 | 35.2 | 28.1 | 31.0 | 26.8 |
| Grand Total | 15.7 | 15.9 | 16.4 | 15.2 | 12.5 | 13.0 | 13.9 |
|  |  |  |  |  |  |  |  |
| **Average of Actual Length** |  |  |  |  |  |  |  |
| Row Labels | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Negative only | 75.9 | 64.4 | 39.4 | 54.7 | 50.6 | 49.2 | 66.2 |
| Complaint | 163.9 | 158.6 | 136.5 | 142.7 | 143.9 | 167.5 | 186.3 |
| Positive Only | 56.7 | 60.1 | 54.2 | 42.5 | 38.5 | 51.5 | 51.5 |
| Praise | 177.9 | 200.3 | 215.6 | 187.4 | 151.8 | 171.6 | 140.6 |
| Grand Total | 85.0 | 85.4 | 88.3 | 82.6 | 67.7 | 70.8 | 74.0 |

On an average number of words 14.67 Words are used in reviews and 79.29 Avg Length of the reviews.

For Praise has the highest average for both Avg # of words 32 and Avg. length 174.

For the Positive only has the Lowest average for both Avg # of words 9 and Avg. length 52.

Conclusion:

Customers tend to write less when they are either very happy (Positive only) or very unsatisfied (Negative only)

On an average the reviews Avg # word and Avg length has reduced from 15.7 to 13.9 and 85 to 74.

Avg # word :-

Over the past 6 years the customers are writing very less words to express their feeling having “Positive only” (2021: 9.8) and Praise (2021: 13.9). But for “Negative only” and complaining the Avg # words have increased.

Avg Length: - Complaint Length is increasing over the past years, for 2021 with 186.3 was the highest.

**Product features by category.**

As we mentioned earlier in our business understanding the product features which impacts the Product customer experience, we have gone through each review and coded them against Sentiment.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Complaint** | **Negative only** | **Positive Only** | **Praise** | **Total** |
| Customer Support not good | 3% | 1% | 1% | 3% | 8% |
| Delivery of service not good | 5% | 2% | 4% | 4% | 16% |
| App/ Web Issues | 5% | 5% | 7% | 5% | 23% |
| Payment Issues | 1% | 1% | 2% | 2% | 6% |
| Promotion/offers Issues | 2% | 1% | 3% | 2% | 9% |
| Validity Issues | 0% | 0% | 0% | 0% | 1% |
| Not Trusting the Brand | 7% | 5% | 2% | 4% | 18% |
|  |  |  |  |  |  |
| Speed of delivery good | 0% | 0% | 2% | 0% | 2% |
| App/ Web good | 0% | 0% | 28% | 3% | 31% |
| Promotion/offers good | 0% | 0% | 6% | 1% | 7% |
| Price is good | 0% | 0% | 0% | 0% | 0% |
| Customer Support good | 0% | 0% | 1% | 0% | 1% |
| Easy to use | 0% | 0% | 6% | 1% | 6% |
| Multiple Brands to choose good | 0% | 0% | 3% | 0% | 4% |
| Delivery of service good | 0% | 0% | 3% | 1% | 4% |
| Payment Good | 0% | 0% | 1% | 0% | 1% |

Overall 31 % of the customers feel the App/web good , 23 % of the Customers feel that there are issues in the App/ Web which needs to be fixed. 3rd highest is Not trusting the Brand having 18 %.

Under the category wise positive only stands significantly high with 28% customers feeling the app / web application is good.

Promotion/offers good, Easy to use , Access to Multiple Brands to choose for purchase, and delivery of service Good are the other key features customers lookout for while purchasing gift card. In order to increase the Positive only and praise

Delivery of service not good, Customer Support not good, App/ Web Issues, Not Trusting the Brand are the Key product features due to which the customers having given complaints and Negative only reviews.

1. **Analyzing the complaints**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Complaints | | | | | | |  |
| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | **Total** |
| Customer Support not good | 1.9% | 1.8% | 3.2% | 3.5% | 5.4% | 4.2% | 4.8% | 3% |
| Delivery of service not good | 4.1% | 3.2% | 5.8% | 7.0% | 7.5% | 4.6% | 4.1% | 5% |
| App/ Web Issues | 7.4% | 5.0% | 6.5% | 7.9% | 8.1% | 3.0% | 2.0% | 5% |
| Payment Issues | 0.7% | 0.5% | 3.2% | 2.6% | 2.2% | 1.8% | 2.0% | 1% |
| Promotion/offers Issues | 3.9% | 1.8% | 0.6% | 2.2% | 2.2% | 0.9% | 0.9% | 2% |
| Validity Issues | 0.2% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.2% | 0% |
| Not Trusting the Brand | 6.8% | 5.4% | 10.4% | 10.5% | 11.3% | 5.7% | 4.8% | 7% |
|  |  |  |  |  |  |  |  |  |
| Speed of delivery good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0% |
| App/ Web good | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Promotion/offers good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Price is good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Customer Support good | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Easy to use | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Multiple Brands to choose good | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Delivery of service good | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Payment Good | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

When we compare 2015 Vs 2021 performance.

Feature Services Not performing well and deteriorating

* Customer Support not good
* Delivery of service not good
* Payment Issues

Feature Services performance has been improved.

* App/ Web Issues (Decreased)
* Promotion/offers Issues (Decreased)
* Not Trusting the Brand (Decreased)

1. **Analyzing the Negative only**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Negative only | | | | | | |  |
| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | **Total** |
| Customer Support not good | 0.4% | 0.9% | 1.9% | 2.2% | 1.1% | 0.7% | 0.4% | 1% |
| Delivery of service not good | 3.0% | 2.3% | 3.9% | 3.1% | 1.6% | 1.7% | 2.4% | 2% |
| App/ Web Issues | 7.7% | 5.4% | 7.1% | 5.3% | 9.7% | 2.2% | 1.7% | 5% |
| Payment Issues | 0.7% | 0.9% | 1.9% | 1.8% | 0.0% | 0.7% | 0.4% | 1% |
| Promotion/offers Issues | 2.5% | 0.9% | 1.3% | 0.9% | 1.6% | 0.7% | 0.2% | 1% |
| Validity Issues | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Not Trusting the Brand | 6.9% | 4.1% | 7.8% | 7.0% | 4.3% | 3.0% | 3.3% | 5% |
|  |  |  |  |  |  |  |  |  |
| Speed of delivery good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| App/ Web good | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Promotion/offers good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Price is good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Customer Support good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Easy to use | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Multiple Brands to choose good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0% |
| Delivery of service good | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Payment Good | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

When we compare 2015 Vs 2021 performance.

Feature Services performance has been improved.

* Delivery of service not good (Decreased)
* App/ Web Issues (Decreased)
* Promotion/offers Issues (Decreased)
* Not Trusting the Brand (Decreased)

1. **Analyzing the Positive only**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Positive Only | | | | | | |  |
| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | **Total** |
| Customer Support not good | 0.6% | 0.5% | 3.9% | 0.9% | 2.7% | 1.3% | 1.5% | 1% |
| Delivery of service not good | 3.6% | 3.2% | 6.5% | 6.6% | 4.8% | 3.3% | 6.5% | 4% |
| App/ Web Issues | 9.5% | 6.8% | 7.8% | 8.8% | 10.8% | 5.9% | 4.8% | 7% |
| Payment Issues | 1.8% | 3.2% | 5.8% | 3.9% | 1.6% | 1.7% | 2.2% | 2% |
| Promotion/offers Issues | 4.0% | 5.9% | 2.6% | 3.5% | 0.5% | 1.7% | 2.0% | 3% |
| Validity Issues | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0% |
| Not Trusting the Brand | 2.2% | 1.4% | 4.5% | 2.2% | 1.1% | 0.2% | 1.1% | 2% |
|  |  |  |  |  |  |  |  |  |
| Speed of delivery good | 0.8% | 3.2% | 2.6% | 0.4% | 0.5% | 1.5% | 6.5% | 2% |
| App/ Web good | 23.7% | 27.1% | 11.0% | 16.7% | 15.6% | 44.3% | 43.4% | 28% |
| Promotion/offers good | 9.4% | 9.5% | 2.6% | 3.1% | 1.1% | 6.1% | 4.1% | 6% |
| Price is good | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.2% | 0% |
| Customer Support good | 0.5% | 0.9% | 0.6% | 0.0% | 1.6% | 0.2% | 0.9% | 1% |
| Easy to use | 4.4% | 9.0% | 1.9% | 2.2% | 2.7% | 12.4% | 3.7% | 6% |
| Multiple Brands to choose good | 2.9% | 2.7% | 1.3% | 1.3% | 1.1% | 8.1% | 2.8% | 3% |
| Delivery of service good | 1.8% | 2.3% | 1.9% | 1.8% | 2.2% | 3.0% | 8.3% | 3% |
| Payment Good | 1.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.7% | 1.3% | 1% |

When we compare 2015 Vs 2021 performance.

Feature Services Not performing well and deteriorating

* Customer Support not good
* Delivery of service not good
* Payment Issues

Feature Services performance has been improved.

* App/ Web Issues (Decreased)

Feature Services performance has been reduced, if it is improved will have a positive effect.

* Promotion/offers Issues (Decreased)
* Promotion/offers good
* Easy to use

Feature Services has performed well and increasing

* Not Trusting the Brand (Decreased)
* Speed of delivery good
* App/ Web good
* Customer Support good
* Delivery of service good
* Payment Good

1. **Analyzing the Praises**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Praise | | | | | | |  |
| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | **Total** |
| Customer Support not good | 2.0% | 4.1% | 3.9% | 3.5% | 3.2% | 2.2% | 3.7% | 3% |
| Delivery of service not good | 4.0% | 4.5% | 9.1% | 6.6% | 4.3% | 3.0% | 4.6% | 4% |
| App/ Web Issues | 7.1% | 5.9% | 9.7% | 8.8% | 5.4% | 2.6% | 2.4% | 5% |
| Payment Issues | 0.8% | 0.5% | 7.1% | 3.9% | 1.1% | 0.7% | 2.2% | 2% |
| Promotion/offers Issues | 3.6% | 3.2% | 1.3% | 3.1% | 1.6% | 0.9% | 0.4% | 2% |
| Validity Issues | 0.6% | 0.9% | 0.6% | 0.0% | 1.1% | 0.0% | 0.0% | 0% |
| Not Trusting the Brand | 4.3% | 5.9% | 9.1% | 9.6% | 4.3% | 2.0% | 3.3% | 4% |
|  |  |  |  |  |  |  |  |  |
| Speed of delivery good | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.7% | 0% |
| App/ Web good | 2.5% | 2.3% | 2.6% | 1.8% | 1.1% | 1.8% | 6.5% | 3% |
| Promotion/offers good | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 1.7% | 1% |
| Price is good | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0% |
| Customer Support good | 0.6% | 0.0% | 1.3% | 0.4% | 0.0% | 0.0% | 0.4% | 0% |
| Easy to use | 0.2% | 0.9% | 1.3% | 1.3% | 0.5% | 0.4% | 0.7% | 1% |
| Multiple Brands to choose good | 0.4% | 0.0% | 0.0% | 0.9% | 0.0% | 0.4% | 0.4% | 0% |
| Delivery of service good | 0.3% | 0.5% | 1.3% | 0.0% | 0.5% | 0.4% | 1.5% | 1% |
| Payment Good | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% | 0% |

When we compare 2015 Vs 2021 performance.

Feature Services Not performing well and deteriorating

* Customer Support not good
* Delivery of service not good
* Payment Issues

Feature Services performance has been improved.

* App/ Web Issues (Decreased)

Feature Services performance has been reduced, if it is improved will have a positive effect.

* Promotion/offers Issues (Decreased)
* Promotion/offers good

Feature Services has performed well and increasing

* Not Trusting the Brand. (Decreased)
* Speed of delivery good
* App/ Web good
* Customer Support good
* Delivery of service good
* Payment Good

# Chapter 11: Deployment

We will be presenting this to the company management to take appropriate steps to improve the performance.

We have trained and tested the model and got 89 % accuracy. After 6 months we can again retest the delivery of service sentiments performance.

# Chapter 11: Analysis and Results

(2-3 pages)

The result of project and analysis are presented in this section. This section includes the outcome of the methodology; i.e., the numerical or descriptive work that was performed. For example, if a SWOT analysis is performed, the results are included in this section. Likewise, if a technical analysis is performed, the computational results are included in this section.

Strength:

Weakness:

Opportunity:

Threat :

# Chapter 12: Conclusions and Future Scope

(1-2 pages)

This is the last section of the text in which conclusions or inferences drawn on the basis of the results of study are described. The conclusions should be linked with the objectives of the study. If possible, to express your concluding remarks based on certain numbers, please do so. If you have developed correlations, give such correlations. Recommendations for further research may be included when appropriate. It is important to be careful that the conclusions should not go beyond data and should be based on the study results.

Conclusion

Future scope of study.

1. Negation handling.
2. N-grams (unigram, bigram, trigrams).
3. Noun and Adjective Usage.
4. Paste tense analysis
5. Intensifier Usage
6. Taking reviews and comments from other social media platforms Facebook and twitter.

# Bibliography

title=Linguistic Understanding of Complaints and Praises in User Reviews, author=Ganesan, Kavita and Zhou, Guangyu, booktitle= Proceedings of NAACL-HLT, pages=109--114, year=2016.

<https://kavita-ganesan.com/complaints-and-praises/#.YQPVoI4zaHv>

<https://www.aclweb.org/anthology/W16-0418.pdf>

<https://www.alliedmarketresearch.com/gift-cards-market>

<https://www.businesswire.com/news/home/20200921005319/en/India-9.34-Billion-Gift-Card-and-Incentive-Card-Markets-2015-2019-2024-with-Covid-19-Update-Q2-2020---ResearchAndMarkets.com>

<https://www.qwikcilver.com/>

<https://www.woohoo.in/>

# Appendix

## Plagiarism Report[[1]](#footnote-1)

## Publications in a Journal/Conference Presented/White Paper[[2]](#footnote-2)

## Any Additional Details

1. Turnitn report to be attached from the University. [↑](#footnote-ref-1)
2. URL of the white paper/Paper published in a Journal/Paper presented in a Conference/Certificates to be provided. [↑](#footnote-ref-2)