Performing Sentiment Analysis on Shopping sites reviews using Parallel Dots and Lexalytic Tools

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Abstract - Now-a-days there is no shortage of review forums, blogs and other social networking sites in this digital world. This study examined overall impact of most trending online shopping sites in India. Customer reviews from different sources are collected and the popularity of online shopping sites is calculated with the help of sentiment analysis tools of machine learning's Natural Language Processing. This paper focuses on the detail about sentiment analysis and how it is used to predict the popularity of online shopping sites by tools.

Keywords – Sentiment Analysis, Text Mining, Machine Learning, Parallel Dots AI, Lexalytics

I. INTRODUCTION

A. Drastic Growth Of Online Shopping in India

In the recent years-commerce sites have boomed in Asian regions. Sites like Amazon, Flipkart, Myntra,

Jabong are growing their businesses drastically. Let it be a small household need like washing powder to buying something very costly such as mobile phones or Television, people have started opting for E-commerce sites. The e-commerce sites have great discounts which attract customers. [1]Also customers get to choose from a great or wider range of options. All the travelling time reduces as there is no need to go to different shops and buy what they want. E-commerce sites like amazon and Flipkart offer their customers with almost all range of products, from household to health care products. Assumption is that these companies growing at an excellent level can start with their own bank in the upcoming years.[2] Online shopping sites offer exchange and return policies for many products. Mobile phones can be bought by exchanging the old ones which people have. There are many credit points schemes which adds a certain credit points to the customer's account which can be used for the further purchases and great discounts can be redeemed. Also nowadays, there is an option for trial at the time of delivery of many clothing items, if customers do not like the purchased clothes they can return it at the time of delivery itself. Such excellent convenient options and offers which e-commerce sites provide their customers is resulting in attracting more and more customers.

B. Initiatives for Development of Online Shopping in India

People prefer online shopping as there are now many ways of payments and also it helps in qualifying for discounts. The are many online payment ways such as Debit Card**,** PayPal**,** Bill Me Later, Bank Transfer, Online Banking ePayments (OBeP), Electronic Bill Payment etc.

II. Online Shopping Sites in India

The fashion requirements, electronics, furniture or beauty products range if infinite on the shopping portals. They provide convenient order & delivery .They also provide easy exchange policy, refund policy, and multiple payment options to their customers. This is the reason that online portals are performing extremely well. As the time passes by these online shopping sites are bringing up more variety of products for their customers.
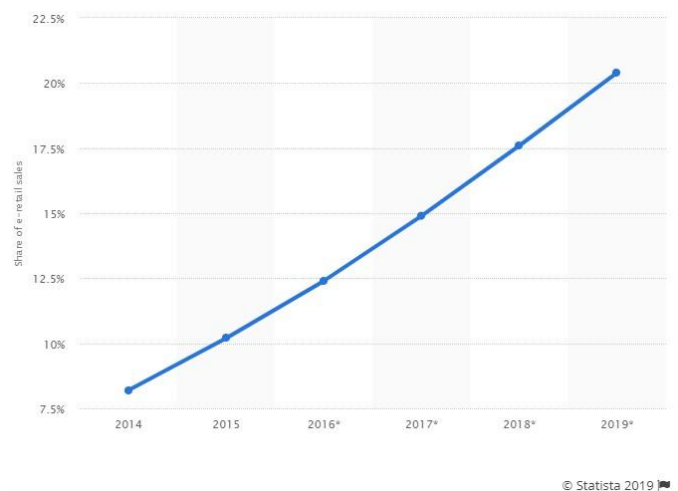

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Figure 1 - Rapid Growth of E-Commerce

Market in India[4]

1) Amazon

Category: Online Marketplace (Electronic devices, Fashion, Accessories etc. They keep on adding new options every day for their customers. They have shopping sites are bringing up more variety of products for their customers.
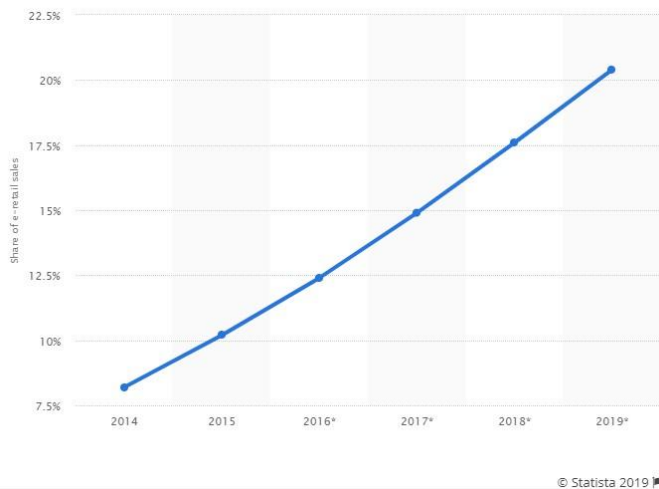
Figure 1 - Rapid Growth of E-Commerce

Market in India[4]

Household products, electronics, beauty products, clothing, mobile phones, books, furniture, etc. Based on the location of the customers amazon provides same day or one day delivery using amazon prime.

Online Monthly Visitors: 54.8M, Alexa Rank: 5

, App Downloads: 100,000,000+ [5]

2. Flipkart

Category: Online Marketplace (Electronic devices, Fashion, Accessories etc. Flipkart can solve all your daily needs. They sell everything from appliances clothing, sports, equipment, and furniture to electronics as well. They offer great discounts and easy, quick delivery options. Flipkart has covered almost all the areas of shopping. People can gift their loved ones vouchers or many exciting gift options.

Online Monthly Visitors: 34.3M ,Alexa Rank: 10, App Downloads: 100,000,000+ [5]

III. SENTIMENT ANALYSIS

Sentiment analysis is circumstantial mining of text .It first identifies the subject and extracts useful information from it. Sentiment analysis helps the business in understanding the sentiments of its customers. However, analysis of social media is restricted to a certain level because of privacy issues.[2]

The customer conversation about a brand is classified on the basis of:

1. Features of a product which is important to the customers.

2. What the user expects from the product

TEXT CLASSIFIER-the basic building block

Sentiment Analysis

It is a text classification tool. All the incoming messages are analysed and grouped as positive, negative or neutral.

Intent Analysis

It analyses the user's intention of sending a particular message. It also identifies if the message is some king of personal opinion, news, a suggestion, appreciation or query.
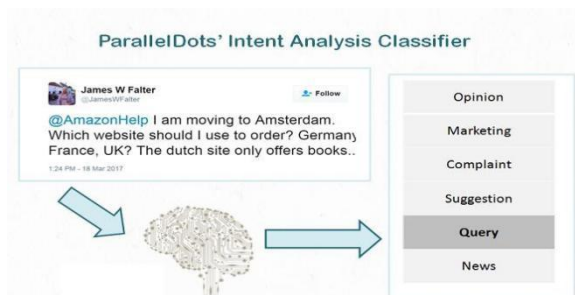

Figure 2 - Intent of textual data is Analyzed

1.   Contextual Semantic Search (CSS)-

To understand the aspect of the brand that is being discussed about by a user is very important. For example: Amazon would like to segregate messages that are related to: billing issues, late deliveries, promotion related queries, product reviews etc. Whereas, Starbucks would want the classification of messages whether they relate to new coffee flavors, staff behaviour, online orders, hygiene feedback, store name and location of store etc. The Working of CSS can be explained in this way, it uses thousands of messages and a concept (like Price) as input and filters out all the messages that are a similar match to the given concept. The graphic representation shown below demonstrates how CSS represents a major advancement over existing methods used in the industry.
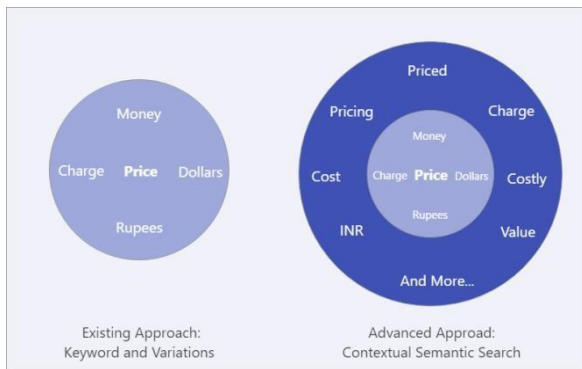
Figure 3 - Existing approach VS Contextual Semantic Search (CSS)

It is a systematic approach for segregating the messages related to price by using the keywords associated to price and cost. This method is ineffective as it is impossible to reflect all the keywords associated to price and their adaptations that represent a particular concept like pricing.CSS takes all the keywords as input and gives the obvious output. It is An AI technique is used for the conversion of every word into a specific point and the interval between these points is used to identify messages contextually similar to the concept.

IV. Applications:

-Sentiment Analysis for Business Intelligence

Insights-rich information removes the hypothesizing and also implementation of prompt decisions. Estimation of customer holding rate becomes easier with the sentiment data about your established and newer products. Based on the review generation through sentiment analysis in business, adjustment to the present market situation can be done and customers can be satisfied in a better way. Overall, immediate decisions can be made with with automated insights. Business intelligence means enterprising all through. Possessing sentiments data presents you that liberty. Before development of a big idea, you can actually test it before experimenting. This is known as concept testing. Whether it is a campaign, new product, or a logo, just perform concept testing on it and do sentiment analysis.

-Customer Experience Is Getting Improved By Performing Sentiment Analysis in Business

A business depends on the fulfillment of its customers. The experience of the customers can be positive, negative, or neutral. In this tech-savvy era, this experience becomes the reason for their online feedback. The data's temperament can be found out and then categorized on the basis of sentiments attached. By doing this business knows about the products and services, whether it needs any improvement or not.

-Sentiment Analysis in Brand

A brand is not described by the product manufactured by it or the services provided by it. The fame that builds a brand thoroughly depends on their online marketing, content marketing, social campaigns, and customer support assistance. Sentiment analysis in business aids in scaling the way in which it is regarded of the existing and the future customers keeping in mind all these factors. Considering the negative sentiments, you can develop more enticing branding and marketing strategies to switch from idle to colossal brand status. Sentiment analysis can help a business majorly to make a drastic transformation.

V. Tools:

1. Lexalytics

Lexalytics, Inc. Is a tool that provides sentiment and intent analysis. Technologies such as SaaS and cloud based technology are used. The engine behind

Lexalytics is Salience 6 that was built as an on premises, which is a multi-lingual text analytics tool.[7] It is leased to other companies who use it to power filtering and reputation management program Lexalytics is text analytics software with sentiment analysis, categorization and named entity extraction. Lexalytics gives you a highly quality Text Analytics that scale at a very larger level, let it be a single desktop analytics of a server handling many computers.

2. ParallelDots

ParallelDots is an Artificial Intelligence platform. It uses advanced Deep Learning and Machine Learning techniques. These algorithms work well with unstructured data such as text, images and videos and make decisions.

VI. ParallelDots and lexalytics tool for text mining

The customer reviews of both Flipkart and amazon were collected from four different sites and were analyzed using two sentiment analysis tools.

(i) **By using ParallelDots AI:**

Figure 5 – Sentiment Analysis Using ParallelDots

AI for Flipkart[7]–[10]

> **61%- Positive, 7%-neutral, 32% -negative -**
>
> **Flipkart**

Figure 6 – Sentiment Analysis Using ParallelDots

AI for Amazon[9], [11]–[13]

> **50%-positive, 12%-neutral, 38% -negative -**
>
> **Amazon**

(ii) **Sentiment Analysis By using Lexalytics:**

Figure 7 – Lexalytics step 1, Choose the dataset

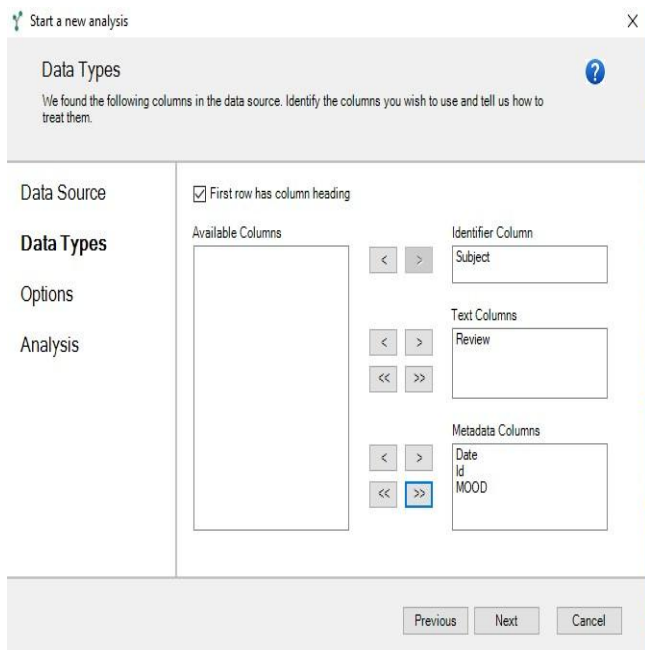
Figure 8 – Lexalytics step 2, choose the number of records

Figure 9 – Lexalytics step 3, Choose the identifier columns and the metadata columns

Figure 10 – Lexalytics step 4, Name the Analysis report to be generated

Lexalytics Amazon Sentiment Phrases

Count of Phrase Menti Phrase Mentions Se ▼				
Phrase	negative	neutral	positive	Grand Total
good			6	7	13
the best				7	7
quality			4	2	6
best			3	2	5
great				5	5
worst	4			4
fast		4		4
very good		4		4
easy		1	3	4
recommend			4	4
happy		3	1	4
Grand Total	4	25	31	60

Figure 10(b) – Lexalytics step 5, analyze the Report and do the findings (For Amazon)

Lexalytics Flipkart Sentiment Phrases

Figure 10(a) – Lexalytics step 5, analyze the Report and do the findings (For Flipkart)

VII. CONCLUSION

After performing sentiment analysis on the customer reviews of both the sites, we came to know that Flipkart has better customer feedback than amazon. Using sentiment Analysis tool, we came to know that people have more positive feedback for Flipkart than that of Amazon. Flipkart got 61% positive feedback whereas Amazon got 50% positive feedback. We also did the sentiment analysis using Lexalytics tool. The Lexalytics tool provided the sentiment phrases points to the reviews, for Flipkart it gave a higher number of positive sentiment phrases points whereas Amazon got low sentiment
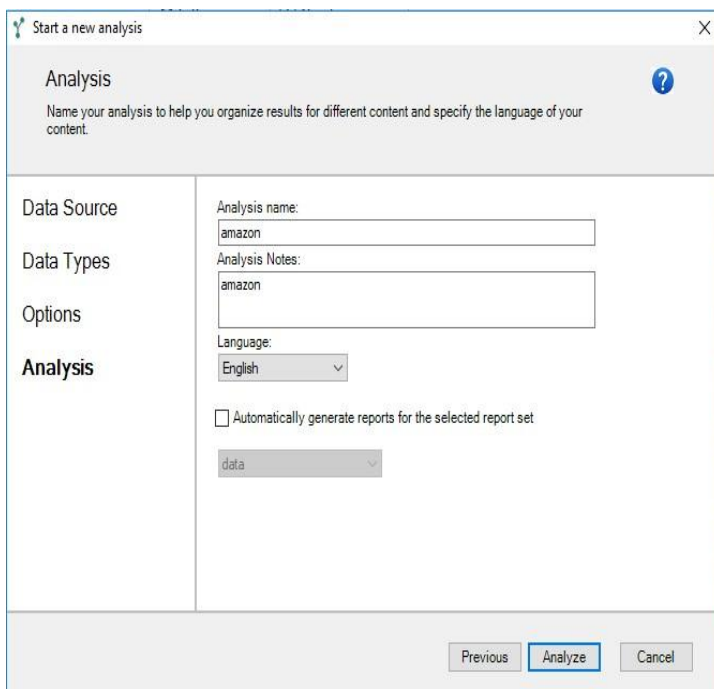
phrases points. After analyzing all outputs from both the tools we can state that People prefer Flipkart more. Customers are happier with Flipkart than amazon.

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