

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. There 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.

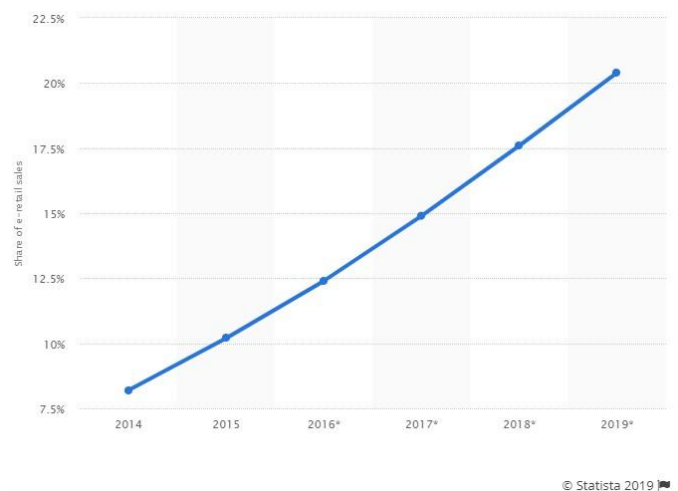


Figure 1 - Rapid Growth of E-Commerce

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.

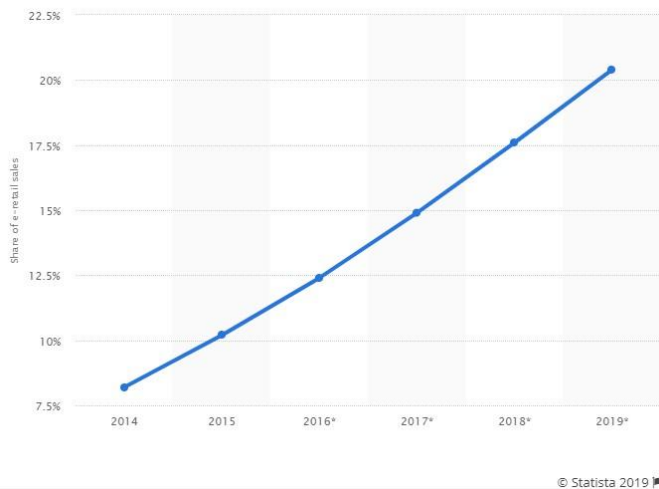


Figure 1 - Rapid Growth of E-Commerce

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 kind of personal opinion, news, a suggestion, appreciation or query.

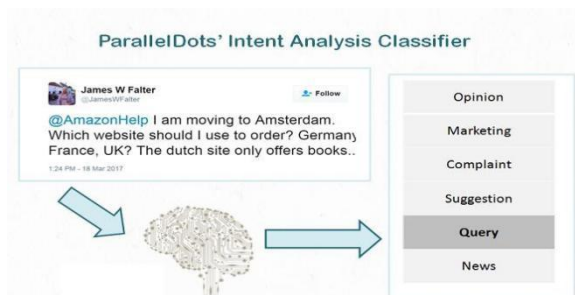


Figure 2 - Intent of textual data is Analyzed

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.

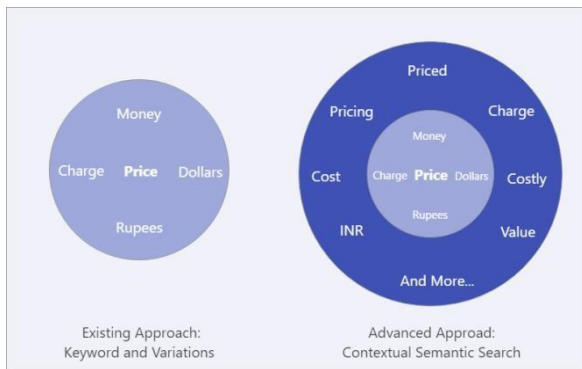


Figure 3 - Existing approach VS Contextual Semantic Search (CSS)

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 Saliency 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:

Id	Date	Subject	Review	Mood
1	04-Mar-19	athetic service and breach of trust by Flipk	Beware of buying anything from Flipkart... Its a fraud	negative
2	04-Mar-2019	id Committed by Flipkart, dispatched Old s	Extremely poor service from Flipkart. My wife had on	negative
3	28-Feb-19	Cheat by Flipkart. !! Poor Service.!!	My wife had ordered one 'Schwarzkopf Professiona	negative
4	22-Feb-19	Fraud	I am Abhishek Sharma. I have placed an order on 1	negative
5	24-Apr-19	Poor After-service	Flipkart after service is so poor. on 12.2.2019 I orde	negative
6	24-Apr-19	See How LAZY..... flipkart is	Today, I received my Football Studs order from Flip	negative
7	10-Apr-2019	Flipkart service	Horrible site... Just make fool of us... They don't kno	positive
8	04-Mar-19	pkart and omnitech retail cheating custom	Bought a washing machine from flip kart delivered b	positive
9	04-Mar-2019	pathetic	Hello today I am very angry because this is my firt ti	negative
10	28-Feb-19	bad	I got a defective tv for the third time and i m forced t	negative
11	22-Feb-19	POOR PACKAGING BY FLIPKART	Hi friends, A couple of days ago I bought a new wat	negative
12	24-Apr-19	Bad delivery and bad service's	Flipkart company is mostly fraud company they alw	negative
13	10-Mar-19	Worst way of exploiting sellers on Flipkart	What non sense rule you were following in terms of	negative
14	24-Apr-19	cheater	This people are looting money from customer. they	positive
15	10-Apr-2019	FLIPKART.COM	I am writng my third review on any website. This tr	negative
16	15-May-19	Very Very Bad Experience with Flipkart.	Flipkart is a best app to use the product quality of	positive
17	13-Mar-19	good	Flipkart is simply super fraud e-commerce Compan	negative
18	10-Mar-19	Never Trust Flipkart customer care team	What a shame Flipkart what a shame We ordered z	positive
19	04-Mar-19	Flipkart tis nice online shop	I m use thea flipkart online Product, I was buy vivo v9	negative

Figure 5 – Sentiment Analysis Using Paralleldots AI for Flipkart[7]–[10]

61%- Positive, 7%-neutral, 32% -negative -

Flipkart

Date	Subject	Review	MOOD
04-Mar-19	An Amazon mistake: A Truly Emotional Disaster	My 8-month pregnant wife was sent to Chennai India from Dubai for	negative
04-Mar-2019	Worst Services ORDER ID #40635691803083517	This is the worst experience to share with Amazon support team in	negative
28-Feb-19	Cheating by www.amazon.in	I placed an online order on http://www.amazon.in/Order # 408-79209	negative
22-Feb-19	Amazon India - Worse Service and a big Harassment	My name is Sumita Samanta, Order Id - #408-3453125-3625962 whi	negative
24-Apr-19	DACOTS SELLING GARBAGE	Dacots are allowed to sell garbage for Rs 5k Bought Holmes Aqua F	negative
24-Apr-19	GTA V fake DVD	I HAVE PURCHASED ONLINE GTA V DVD OF RS 2099 BUT ALL DVD CO	negative
10-Apr-2019	Best shop if buy with full information	My son is 9 months old and from his birth I'm purchasing his needs	negative
04-Mar-19	Will make you mad	They are not good for delivering the product. will take long time to del	neutral
04-Mar-2019	# I AM SPEECHLESS#	Hello everyone I am sharing my personal Experience with Amazon.in.	negative
28-Feb-19	The worst experience ever.	Once I bought a smartphone known as samsung galaxy J7 max its o	positive
22-Feb-19	Honest Review	I am regular customer of Amazon company since last 3 year. Amazo	negative
24-Apr-19	Worst customer service # Fraud	I ordered a bluetooth handset from amazon and this is what happene	neutral
10-Mar-19	Amazon! Quick and fast!	Amazon is one the largest operating online platform. You can shop fr	negative
24-Apr-19	Customer satisfaction is best	When it comes to online shopping, there should be four improtent thi	neutral
10-Apr-2019	What we search and buy will not be the same thing	I bought an gym cycle stating it's company as Orbitrek before. Septen	positive
15-May-19	AMAZON.IN	I am writing my second review on any website. This time I am descri	negative
13-Mar-19	Amazing Experience	Everyone in my house is Associate in Nursing Amazon client. What	neutral
10-Mar-19	Sell your products in amazon.in is new to me	I would wish to tell the experience I had with amazon as seller custon	positive

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

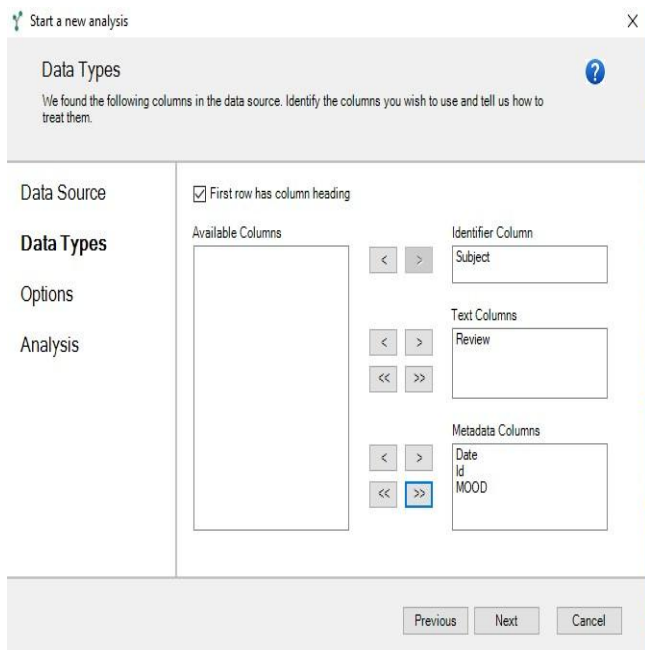


Figure 9 – Lexalytics step 3, Choose the identifier columns and the metadata columns

Lexalytics Amazon Sentiment Phrases

Phrase	negative	neutral	positive	Grand Total
good			6	7
the best				7
quality			4	2
best			3	2
great				5
worst		4		4
fast			4	4
very good			4	4
easy			1	3
recommend				4
happy			3	1
Grand Total	4		25	31

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

Lexalytics Flipkart Sentiment Phrases

Phrase	negative	neutral	positive	Grand Total
good		18	5	23
quality	2	5	5	12
very bad	5	7		12
very good		9		9
defective	6	1		7
better		7		7
thank you		4	2	6
fast		3	3	6
great			6	6
bad	5			5
nice		2	3	5
awesome			5	5
proper	4		1	5
problem	3	2		5
cheating	3		2	5
Grand Total	28	58	32	118

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

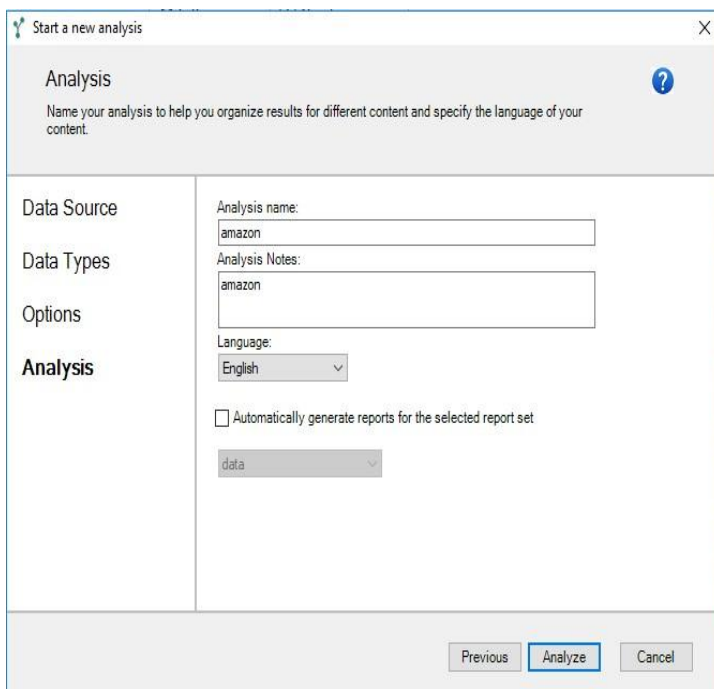


Figure 10 – Lexalytics step 4, Name the Analysis report to be generated

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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