

# THE SENTIMENT ANALYSIS AS A TOOL OF ONLINE BUSINESS ANALYTICS

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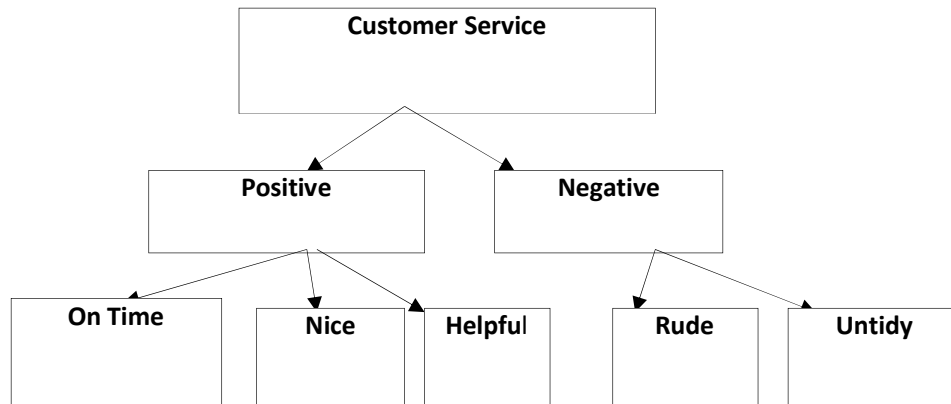
## **Abstract:**

Availability of abundant business data makes data analysis complicated and hinder the decision making process in business. Moreover, dynamic behaviour of online customers need to be addressed in more efficient manners. Particularly in fields of consumer buying behaviour, customer sentiment analysis is the fastest growing area where people gave their opinions related to specific product by comments & posts. It helps in analysis the positive, negative & neutral reviews of the customer which they posted on social networking sites. The sentiment analysis also helps in extracting information about current trends and helpful to increase market value of product by improving its quality. Now-a-days sentiment analysis has shifted from analyzing the data from online product reviews to social media (Facebook and twitter). Present research is an attempt to explore the potential

**Keywords:** Sentiment analysis, Text mining and Opinion mining, buying behaviour analysis

## **1. Introduction**

Sentiment analysis is a method of processing information to determine the customer opinion and responses in the form of text or responses received from social media sources. It is a process of identifying and categorizing the opinions of customers in the text format. It is also known as opinion mining. It determines whether the contents of documents are either in positive or in negative sense. It also describes that how customer feels towards any particular product, brand or any other thing. In relation with this, customers use positive words like-'amazing', 'friendly', 'clean', 'exceeded' etc., negative words like - 'unprofessional', 'rude', 'scam', 'incompetent' etc. By analyzing the data, organizations came to know about the reviews of customers is either in positive or negative sense towards product. Analysis of data allows organization to assess whether customer reaction towards a new product is in negative or positive way, or whether owners of the product are experiencing major technical difficulties. Analysis of aggregated data over time provide insights into trends, while analysis of individual cases in real companies address and resolve customer issues quickly.



**Figure1: Customer Services analysis**

Customer sentiment doesn't describe why customers feel in that way. To know the aspects whether customers feel happy or not, organization wants to know about the feedback of customers which they give for any product. For example in a restaurant, the aspects may be 'customer service', 'cleanliness' or 'food'. After doing depth analysis, specific themes like 'food is not too good', 'customer service is not proper' found that are easier to understand and also important to act upon. It is important to improve the services especially for target customers. There is a difficulty to interpret when customers describe same thing in different ways. For example: when talking about 'cleanliness of restaurant', customer uses the words like-'clean', 'tidy', 'dirty' or 'dusty'.

In order to improve the marketing and productivity, producers use different strategies as these are helpful in determining the behavior of users regard to any particular event, product or movies etc by using sentiment and customers opinions.

## Literature Review

Several studies have been conducted in identifying the customer sentiment analysis. Some of them are discussed below: Mika V. Mäntylä et al. [1] presented a literature Review of Research Topics, and Venues. They utilized both text mining and qualitative coding & analyze 6996 papers from scopus. In this study, it is found that sentiment analysis & opinion mining has roots lying in studies on public opinion analysis during 20<sup>th</sup> century. In 2005 only 101 papers were published, while in 2015 it increase up to 5699 which has undoubtedly fastest growing area as compared to previous years. Also discovered that sentiment analysis papers were scattered to multiple publication venues & combined number of papers in top 15 venues only represent ca. 30% of papers in total. Most recent papers during (2014-16) were focused on social media such as Twitter & Facebook. Other popular topics were mobile devices, stock market & human emotions. It presented & identified top 20 cited articles of sentiment analysis with through Review of history & analyzed the recent studies.

Raj Kumar Verma et al. [2] presented an overview of past and current research on Twitter sentiment analysis and many other techniques to improve the accuracy of classification of social sentiments. They also discussed about Topic modelling area & summarization, both can be used together to develop an intelligent systems that can be helpful in extracting useful information out of huge data from social media. There are some areas in sentiment analysis on which no research has been conducted. There are st

ill untouched areas like – Data refinement, Topic modelling of sentiments, and summarization of sentiment tweets which have good chances to get new techniques, methods and outcomes by exploring these areas.

Ammar Mars et al. [3] proposed framework to extract features of customer feedback using Bigdata technologies combining with Machine learning and Text mining tools. Opinion polarity determination based on MapReduce algorithm has been implemented. For testing & validating the effectiveness of the framework many experiments were conducted.

Harshali P.Patil et al. [7] conducted a survey on sentiment analysis by identifying opinions from web and then classify them according to their polarity i.e. in positive or in negative sense. The main focus on latest updates regarding sentiment analysis, classification methods and their challenges. They found that most work done on machine learning method not on lexicon based method.

Saqib Iqbal et al. [8] presented detailed survey on sentiment analysis and on opinion mining for analysis of customer behavior on social media. It also discuss about the pros and cons, methods and techniques for various papers/articles on sentiment and opinion mining. The main motive is to classify the sentiments with regard to specific event occurred to evaluate the efficiency and accuracy levels by applying various sentiments and opinion mining algorithms.

### Score of sentiment analysis in Business

Sentiment analysis determines that what customers really desired what they think and what actually they want. It has been observed that above 90% marketing professionals think that social media impacts their businesses to grab the customer attention in several way outs. [4] Following are the benefits:

- **Adjust Marketing strategy:** Social media is not only the platform where you can post, promote or advertise brand, product or any other item. It is a place where customer can extract full information regarding the product. Build a short term campaign for marketing by providing customers what they want and adjust the campaign to fit more target audience by sentiment analysis [5].
- **Measuring return on investment:** Success lies on how many positive discussions about customers related to campaign, not on how many number of followers, likes and comments. Positive and negative discussions among the audience can be measured quantitatively and qualitatively by sentiment analysis.
- **Built product quality:** Product quality is not only judged by how well functionally performed but it also attracts customers by presentation in well formed. To get information from target audience two ways are there: first by doing planned survey and other by casual discussions related to brand in social platform. Globally, it is essential to have a knowledge about different languages so that sentiment analysis can interpret what the customer wants and it require human intelligence not computer technology to interpret every language easily[6].
- **Customer services improve:** By providing good quality product and services to the customers, always responds valuable feedback to the customers to keep them happy by providing good services like- on time delivery, compensation against any fault in product. Sentiment analysis can help in negative discussions and provide quick response in real time alerts. If customers raised complaint against product/ brand, more quickly that brand company react it is easy for customer to forget the defaults and satisfied with their service.
- **Managing the crisis:** on the regular basis checkout the customer conversation against product whether go in negative or in positive way which leads to the crisis. Always keep an eye on their

conversation on social media so that any rumor can't extent.

- **Lead generation:** Loyal and happy customers who act as brand ambassadors will bring more number of customers in regard to specific product. By sentiment analysis it will tell that what customers wants, needs and feels about products and to bring innovative ideas to attract new customers.
- **Sales revenue:** By fulfilling all the above points i.e. customer satisfaction by providing good quality product, on time delivery and fault recovery leads to increase in sales revenue. If there is positive opinions of customers about the product trends to increase in sales revenue but negative opinions reduces sales revenue , all this is measured by sentiment analysis.

## Conclusion:

Sentiment analysis used in various fields like-marketing, social media analysis, marketing research, customer service, research and development, measuring brand awareness, reputation management, tracking of campaign progress and predicting tools. These tools helps in monitoring and analyzing sentiment to access customer opinions that can be effective in business strategies to improve their productivity in market.

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