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# PREDICTION OF ASPECT CATEGORY ON CUSTOMER REVIEWS USING ASSOCIATION RULE MINING

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**Abstract**

Now a days online consumer review is a most powerful tool for decision making. This term serves as electronic word of mouth which become increasingly popular. Millions of people are now buying products and services via online. Web services are provided this feature to users openly. The web can provide an extensive source of consumer reviews. The user can read all the reviews and evaluate fair view of product or service. This can apply only to a limited number of reviews presented on the web. The web contain more than hundreds of reviews then problem arrived and time consuming also. A text processing framework is desirable which summarize all the reviews. This framework would find out general aspect category addressed in all review sentences. The method presented in this framework which applies association rule mining on co-occurrence frequency data to find out these aspect categories. From this result, generate polarity score for each aspect category. This polarity score helps to evaluate fair decision making for the customer as well as the company. The graph representation is also provided by the system for quickly evaluate the decision for products or services provided by the web.

***Keywords:***

consumer reviews;

aspect category;

co-occurrence

frequency data;

polarity score;

## 1. Introduction

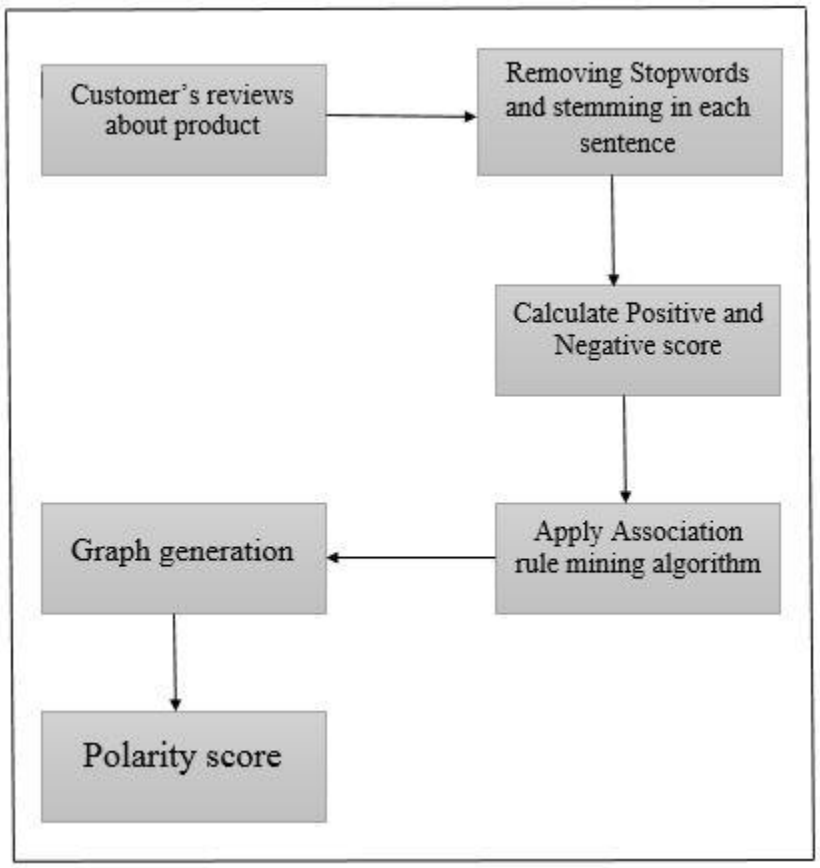
In the present association, clients wish to buy the item or products by on the web. Informal exchange is a conventional method which gives an exhortation and suggestions about any online item or products by orally. Family as well friends are principle key elements for this conventional strategy. So these works were not made in a point of view for expansive dataset. So there is requirement for framework which gives a yield such that clearify the perspective of item into clients mind. So this will build the profitability and also execution of item or products. This system serves to client and additionally organizations.

Lately there has been an in the long run development in enthusiasm from brands, organizations and scientists in Sentiment Analysis and its application to business applications. Associations have two kinds of client feeling or criticism information that they measure, store, and break down: organized and unstructured information. Organized information will be data that is obviously characterized and simple to give an account of. It is the sort of information that is by and large found in an overview and can be composed in a spreadsheet: name, area, age, and rating (3 out of 5 stars, for instance, or a 10 for "most fulfilled" versus a 1 for "minimum satisfied").Unstructured information as it exists today seems to be, essentially, content, in spite of the fact that it can likewise incorporate other media, for example, sound, photographs, or recordings. Unstructured information can be caught in an email, the "extra remarks" area of an overview, voice accounts of client associations, a post on a client survey site, in web-based social networking, call focus notes, talk transcripts, and many different spots. Examining this information accurately is basic, since it uncovers everything from purchasing patterns to item imperfections and gives a huge business advantage. Associations frequently battle to do this examination, be that as it may, in light of the fact that unstructured information is essentially harder to order and cover than organized information. It can be difficult to parse because of syntactic mistakes or slang, it regularly contains different inconsequential thoughts, and it can speak to different levels of notion identified with every thought.

System Architecture:

In this system, take input as customer’s reviews, process on that to removes stopwords and stemming words i.e. less frequency words. Output given to aspect category detection module to

find out the aspect category for each statements.The sentimental analysis module after this generate polarity score.




**System Architecture**

There are following modules in our proposed system.

a. Data Accumulation

b. Preprocessing of data

c. Transformation

d. Aspect Category

e. Evaluation

**Module1:Data Accumulation**

getInputFile() method is used to take the file from storage. This method is available in java. This module take input as different statements on which system able to process and analyze.

**Module2:Preprocessing of data**

This module removes stopwords and streeming words from customer reviews statements. Stopwords are like a, an, am, and, are, as, at, be, been, both, did, do, so, some, was etc. Streeming words like ed, ing, ation , lly etc. All stopwords and streem words are removed from reviews so delection of this words are not affected on system as well as processing time is also minimized.

**Module3:Transformation**

In the transformation process, the score for each sentence is calculated in thepresented documents.This score helps to detect the each positive or negative scoring.

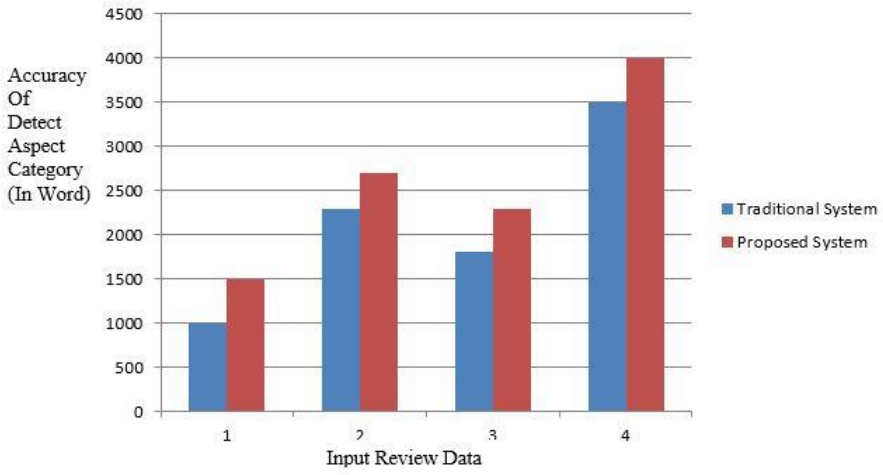
**Module4:Aspect Category**

Apriori association rule mining algorithm is used to find this relationship. This algorithm generates config value for each relation exist for particular input categories.

**Module5:Evaluation**

It gives the review result in graph.The representation of scoring is important on every framework. This helps to improve accuracy of system.There are three graph generates first is polarity score of each reviews, second graph is aspect category detection score and third is positive or negative scoring graph.

## 3. Results and Analysis

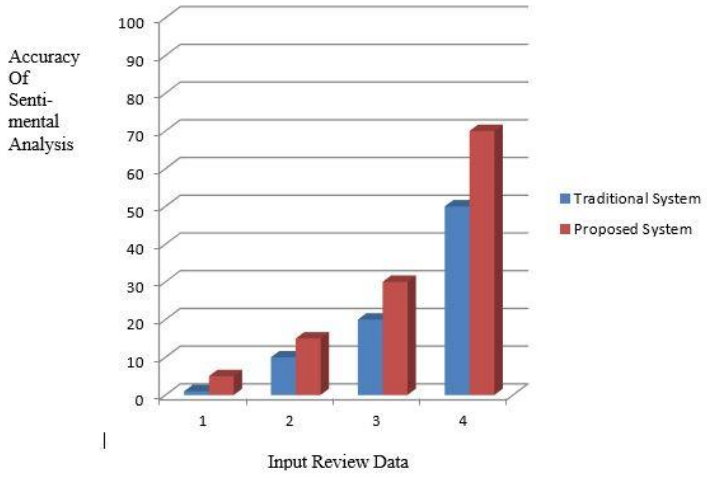


Comparison of Traditional System and Proposed System for Aspect Category

| Review Data | Aspect categories in traditional System | Aspect categories in proposed System |
|---|---|---|
| 1 | 1000 | 1500 |
| 2 | 2300 | 2700 |
| 3 | 1800 | 2300 |
| 4 | 3500 | 4000 |

Aspect category comparison

Above graph representation of traditional verses proposed system shows how the aspect category is detected in two different frameworks.Prediction of aspect category is one of biggest task in sentiment analysis.As per traditional system they only shows the statements i.e. reviews which is written by customers is processed.System directly apply the process and get the output, it is time consuming process.Because directly predict the aspect not efficient method. In proposed system, first framework anlyze the all statements and removes then further procedure begins.



Comparison of Traditional System and Proposed System for Sentimental Analysis

| Review Data | Positive/Negative scoring of traditional System | Positive/Negative scoring of proposed System |
|---|---|---|
| 1 | 1 | 5 |
| 2 | 10 | 15 |
| 3 | 20 | 30 |
| 4 | 50 | 70 |

Sentimental analysis comparison

Detetcting a positive and negative scoring of each reviews is the task for framework.From this resuly customer as well as companies improves their decision making power. In traditional system, less amount of scoring given for one document file.With the help of this system get overall percentage of all reviews simultaneously.

**4. Conclusion**

The issue of previous system is only for limited number of reviews presented on it. The web contain more than hundreds of reviews then problem arrived and time consuming also. The proposed system designs a text processing framework. This framework find out general aspect category addressed in all review sentences. Each sentence is checked by the framework and system gives an appropriate category for particular review. The method presented in this framework which applies association rule mining on data to find out these aspect categories. The system is for both structure sentences and unstructured sentences. For this type of sentences, positive and negative scoring of each sentences is needed. So system is able to find out whether sentence is positive or negative. From this result, generate polarity score for each sentences. This polarity score helps to evaluate fair decision making for customer as well as company.

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