



Paper Review

**“Sentiment Analysis of E-commerce Customer Reviews Based
on Natural Language Processing”**

Course Title: Natural Language Processing

Course Code: CSE431

Name: Irfanul Hoque

ID: 21301232

Name: Md. Sifat Mahmud

ID: 20101477

Section: 02

Team No. : 45

Submitted To

Annajiat Alim Rasel

Senior Lecturer

1) Summary:

1.1 Motivation/Purpose/Aims/Hypothesis

The goal of the project is to improve customer attrition prediction in the e-commerce industry by integrating sentiment analysis. With the hope of improving forecast accuracy and comprehension of customer behavior, the goal is to enhance conventional churn prediction models with information from customer sentiment.

1.2 Contribution:

By using sentiment analysis to churn prediction utilizing machine learning methods including Random Forest, SVM, Naive Bayes, and Logistic Regression, this study significantly advances the field. The study's distinctive methodology is assessing these models' churn prediction effectiveness with sentiment analysis included.

1.3 Methodology:

The process entails leveraging a Kaggle dataset that includes user activity, purchase history, and review sentiment to train and validate models. Performance measures including recall, accuracy, precision, F1 score, and AUC were employed in the assessment process. By incorporating sentiment scores with additional features, the accuracy of the churn prediction models was improved.

1.4 Conclusion:

As a result of its superior predictive accuracy, especially in AUC, the study shows that Logistic Regression is useful in differentiating between churners

and non-churners. SVM performs in a balanced manner, Random Forest has good recall and precision, and Naive Bayes has a high recall rate. The study demonstrates how important sentiment analysis is for improving churn forecasts.

2 Limitations:

2.1 First Limitation/Critique

The possible over-reliance on past data, which might not correctly reflect present or future market trends, is a drawback. This can result in models that are less flexible to changes in the preferences and behavior of customers in real time.

2.2 Second Limitation/Critique

The study may not take into consideration changes in consumer behavior and market trends that occur in real time because it mainly concentrates on predicting models built on historical data. Because e-commerce is dynamic, models need to be flexible enough to react quickly to changes in customer preferences and the state of the economy.

3) Synthesis:

The concepts discussed in this paper will likely have a significant impact on future e-commerce tactics. Businesses can improve customer engagement and loyalty by anticipating churn and proactively addressing customer demands through a deeper awareness of customer feelings. This work paves the way for the creation of more sophisticated, real-time sentiment analysis instruments and predictive models that are flexible enough to adjust to shifting market conditions. Additionally, it lays the groundwork for future

research into tailored consumer experiences, utilizing AI and machine learning to revolutionize online transactions.