



Paper Review

**“Sentiment Analysis for Enhanced Customer Churn
Prediction in E-commerce”**

Course Title: Natural Language Processing

Course Code: CSE431

Name: Irfanul Hoque

ID: 21301232

Section: 02

Team No. : 45

Submitted To

Annajiat Alim Rasel

Senior Lecturer

1) Summary:

1.1 Motivation/Purpose/Aims/Hypothesis

This study is driven by the urgent need for accurate customer churn prediction in the rapidly developing e-commerce industry. The main goal is to improve the accuracy and predictive power of standard churn prediction models by including sentiment analysis into them. It is hypothesized that a more proactive and accurate method of anticipating consumer turnover would be provided by utilizing Natural Language Processing (NLP) tools to understand customer attitude.

1.2 Contribution

The paper makes a substantial contribution to the field by combining churn prediction models with sentiment analysis, an area of e-commerce research that has not been well studied. Using a large dataset, it investigates several machine learning techniques, such as Random Forest, SVM, Naive Bayes, and Logistic Regression. The research is noteworthy because it not only forecasts customer churn but also comprehends the underlying attitudes of the customers, which is crucial for developing retention measures.

1.3 Methodology

Obtaining a comprehensive dataset from Kaggle is the first stage in the methodology. Next, there are thorough preprocessing procedures such as feature extraction, managing missing values, and normalization. Using a lexicon-based approach, sentiment analysis divides reviews into three categories: positive, negative, and neutral. The research then uses a variety of machine learning models and compares how well they predict turnover while incorporating data from sentiment analysis.

1.4 Conclusion

The study finds that combining sentiment analysis with churn prediction models significantly improves their performance. This unique technique allows E-commerce enterprises to modify their strategies for better client retention and lower churn rates by providing a deeper insight of consumer behavior and satisfaction.

2) Limitations

2.1 First Limitation/Critique

The study's dependence on a lexicon-based approach to sentiment analysis poses a problem because it might not fully capture the subtleties and complexity of spoken language. This approach could distort sentiment analysis results by ignoring idioms, sarcasm, and context-specific interpretations.

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.