## 1.Summary:

### 1.1 Motivation:

The study paper emphasises the need for effective tools and methods to improve online buying, drawing inspiration from the notable expansion of e-commerce in Bangladesh and around the world. It also highlights how crucial quality control is in the e-commerce sector, since buyers frequently base their decisions on the opinions and recommendations of prior customers. Maintaining the accuracy of these assessments is essential to maintaining trustworthiness in the virtual economy.

### 1.2 Contribution:

Sentiment Analysis in Bangla: The study recognises the urgent need for sentiment analysis in Bangla and offers insights into the field within the Bangladeshi local market.
Future Work Roadmap: As a means of advancing sentiment analysis methods and tools, the research lays out a clear course for future work that includes creating a browser plugin, real-time sentiment analysis, and multilingual support.

### 1.3 Methodology:

The study eliminated punctuation and stop words from Bangla product reviews and comments from e-commerce websites. Sentiment research was done using emojis. The reviews were split up into individual words using the Porter stemming technique. Positive and negative sentiment categories were applied to the dataset. The system was evaluated using machine learning techniques such as Logistic Regression, Random Forest, SVM, KNN, and Decision Tree.The most accurate model was SVM, at 88.81% on a 30% dataset.

### 1.4 Conclusion:

The importance of sentiment analysis in Bangla for enhancing e-commerce is highlighted in the paper's conclusion. It draws attention to the remarkable accuracy of SVM and describes upcoming work that will be done to improve sentiment analysis tools, such as the creation of browser plugins. The study's importance in promoting safer and more knowledgeable online shopping in Bangladesh is emphasised in the conclusion.

## 2. Limitations

### 2.1 First limitation:(Fine-Grained Sentiment Analysis)

Product reviews written in Bangla are the main focus of this paper's binary sentiment analysis (positive/negative). Sentiment analysis at the finer points, encompassing strongly positive, slightly positive, neutral, mildly negative, and strongly negative feelings, is not covered. More detailed insights into consumer opinions and product quality may be obtained by improving the system to enable more sophisticated sentiment analysis.

**2.2Second limitation:(Evaluation metrics)**

The research report primarily examines algorithm performance using accuracy, but it lacks discussion on other essential evaluation metrics such as precision, recall, F1-score, and ROC-AUC. A comprehensive review of these measures is crucial to provide a more complete picture of the models' performance and reliability in sentiment analysis.

**3. Synthesis:**

The paper's ideas pave the way for practical applications and future scopes that can significantly impact e-commerce, consumer experiences, and business operations.Global-Browser Plugin**:**The idea to create a browser plugin for sentiment analysis in real-time is in line with the increasing need for resources that enable online buyers to make wise choices.

Integration of More Languages: Expanding language support can extend the system's applicability to a broader audience and diverse marketplaces.

Business Improvement: The system's ability to identify defects and areas for improvement in products and services can lead to better customer experiences. This can positively impact e-commerce businesses, resulting in increased customer satisfaction and loyalty.

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