

## A Comprehensive Framework for Fraud Prevention and Customer Feedback Classification in E-Commerce

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**Abstract :** One of the most significant challenges faced by people in today's digital era is an alarming increase in fraudulent activities on online platforms. The fascination with online shopping to avoid long queues in shopping malls, the availability of a variety of products, and home delivery of goods have paved the way for a rapid increase in vast online shopping platforms. This has had a major impact on increasing fraudulent activities as well. This loop of online shopping and transactions has paved the way for fraudulent users to commit fraud. For instance, consider a store that orders thousands of products all at once, but what's fishy about this is the massive number of items purchased and their transactions turning out to be fraud, leading to a huge loss for the seller. Considering scenarios like these underscores the urgent need to introduce machine learning approaches to combat fraud in online shopping. By leveraging robust algorithms, namely KNN, Decision Trees, and Random Forest, which are highly effective in generating accurate results, this research endeavors to discern patterns indicative of fraudulent behavior within transactional data. Introducing a comprehensive solution to this problem in order to empower e-commerce administrators in timely fraud detection and prevention is the primary motive and the main focus. In addition to that, sentiment analysis is harnessed in the model so that the e-commerce admin can tailor to the customer's and consumer's concerns, feedback, and comments, allowing the admin to improve the user's experience. The ultimate objective of this study is to ramp up online shopping platforms against fraud and ensure a safer shopping experience. This paper underscores a model accuracy of 84%. All the findings and observations that were noted during our work lay the groundwork for future advancements in the development of more resilient and adaptive fraud detection systems, which will become crucial as technologies continue to evolve.

**Keywords :** behavior analysis, feature selection, Fraudulent pattern recognition, imbalanced classification, transactional anomalies

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