**Model Performance**

1. Accuracy: 0.72

The overall accuracy of the model is 72%, indicating that it correctly predicted the outcome for 72% of the samples in the test set.

1. Confusion Matrix:

True Positive (TP): 1

True Negative (TN): 144

False Positive (FP): 1

False Negative (FN): 54

The confusion matrix shows the number of correct and incorrect predictions, organized by actual and predicted classes.

1. Precision:

Precision for class 'N' (No fraud): 0.73

Precision for class 'Y' (Fraud): 0.50

Precision measures the accuracy of the positive predictions.

1. Recall:

Recall for class 'N' (No fraud): 0.99

Recall for class 'Y' (Fraud): 0.02

Recall, also known as sensitivity or true positive rate, measures the ability of the model to capture all positive instances.

1. F1-Score:

F1-score for class 'N': 0.84

F1-score for class 'Y': 0.04

The F1-score is the harmonic mean of precision and recall, providing a balance between the two.

1. Support:

The number of actual occurrences of each class in the specified order (N, Y).

1. Interpretation:

The model shows a relatively high precision for class 'N' (No fraud), suggesting that when it predicts no fraud, it is correct 73% of the time.

However, the recall for class 'Y' (Fraud) is low (0.02), indicating that the model struggles to correctly identify instances of fraud. It misses a significant number of actual fraud cases.

The F1-score for class 'Y' is also low (0.04), reflecting the trade-off between precision and recall.

The accuracy might be influenced by the high number of true negatives (TN), but it doesn't provide a complete picture, especially in imbalanced datasets.

1. Next Steps:

Consider exploring ways to address class imbalance, such as oversampling the minority class or using different evaluation metrics.

Fine-tune the model parameters or consider trying different algorithms to improve performance.

Investigate misclassified instances to understand potential patterns or issues in the data.

These insights can guide further improvements in the model and help in making it more effective for fraud detection.