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Fraud Risk Mitigation Blueprint

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Insight

- Recognized that fraudulent incidents are primarily concentrated in 'Cash Out' and 'Transfer' transaction types.(Fig-4 and Fig-6)
- For fraudulent 'Cash Out' transactions, the new balance becomes zero, while for 'Transfer' transactions, the new balance decreases significantly but remains above zero.(Fig-6)
- Feature importance rankings.(Fig-12)
- Model Performance:(Fig-12.5)

Acknowledge the high overall model performance with an accuracy of 95.48%, precision of 98.02%, and recall of 92.84%.

Continue monitoring and fine-tuning the model to maintain its effectiveness.

- Reduce the decision tree depth to 5 to enhance model interpretability and avoid overfitting.
- Acknowledge the use of Synthetic Minority Over-sampling Technique (SMOTE) to address data imbalance.

Actionable Steps:

- Increase Monitoring of 'Cash Out' and 'Transfer' Transactions
 1. Develop more sophisticated fraud detection rules for these transaction types.
 2. Increase the number of human reviewers who analyze 'Cash Out' and 'Transfer' transactions.
- Develop Policies for Handling 'Cash Out' and 'Transfer' Transactions
- Continue Using the Decision Tree Model for Fraud Detection:
 1. Maintain the decision tree model as it effectively identifies fraudulent transactions.
- Focus on Monitoring the Most Important Features:
 1. Emphasize monitoring of the top features identified by the model.
 2. Implement real-time alerts based on changes in these features.

- Allocate resources and monitoring efforts to features with the highest importance:
 1. "diff_org" (Initial balance change)
 2. "amount+oldorg" (Transaction amount in relation to old balance)
 3. "amountsumrolling7" (Rolling sum of transaction amounts over 7 days)
 4. "amountmeanrolling3" (Rolling mean of transaction amounts over 3 days)
 5. "sqr_amount" (Squared transaction amount)

Additional Notes:

1. Continuously update the model with new data to adapt to evolving fraud patterns.
2. Collaborate with other departments, such as security and risk management, to develop a comprehensive fraud prevention strategy.