

PREDICTIVE ANALYTICS WITH MACHINE LEARNING

Predicting Financial Fraud

Data Source :

Telecom Company Data

Data Type :

Ticketing System Data

Application :

Analance



PROOF OF CONCEPT – POWERED BY ANALANCE

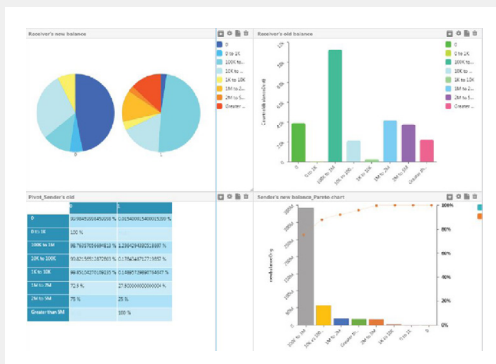
While electronic transactions bring immediacy to the financial space, this convenience may come with a price. The complicated nature of mobile money has the potential to compromise security. To combat fraud and comply with anti-money laundering regulations, financial institutions should have measures in place to anticipate fraudulent transactions.



LEVERAGING ML TO MITIGATE RISK OF FRAUD

Because of the sensitive nature of real financial transaction data, synthetic transaction data was generated for this business case. Analance used a sample of mobile money transactions to predict fraud— with summaries and findings easy to explore through dashboards and reports.

By leveraging Analance machine learning (ML), transactions can be classified into risk categories based on their likelihood of fraud and future outcomes can be predicted with accuracy as high as 96%. With built-in automations, alerts can be scheduled to notify BFSI professionals when transactions are likely to be fraudulent. This allows early intervention to mitigate financial and other losses.





EXPLORATORY DATA AND MODELING PROCESS

With visibility into the variables that are likely to characterize fraudulent transactions, financial institutions can put measures in place to manage losses, avoid damage to company reputation and customer experience, and even keep company morale in check.

A total of 6,362,620 transactions were observed and 9 different predictor variables were considered such as transaction type, transaction amount, customer ID, recipient ID, initial account balance, and more.

All variables available were studied to understand distributions. Data was cleaned by the means of handling outlying values, missing values, and looking for interrelationships between predictors before looking to see if any data had a significant relationship with the outcome. A Bivariate Analysis (Chi-Squared) was done for all predictor/outcome combinations, which helped in restricting the analysis to only those predictors that majorly influence financial fraud.



DATA MODELING AND FINDINGS

A total of 50 different models were built but the Two-Class Adaptive Boosting model was chosen as the winning model based on the model accuracy. From the analysis performed, the highest risk of financial fraud was found for:

- Transactions from origin accounts that suddenly dip to zero balance from an initial balance of 1M (77%)
- Transactions to destination accounts that show a sudden spike in balance from an initial balance between 0 and 100,000 (73%)
- Transactions to destination accounts with zero balance, despite receiving 1,000 to greater than 5M (50%)
- Transactions that range from 100,000 to 1M, and when both the sender's new balance and receiver's old balance is zero (46%)



DATA ANALYSIS AND INSIGHTS

Evidently suspicious transactions are sure to be characterized as fraudulent. Transactions by accounts with zero balance (either they become 0 or increased drastically from 0) are often considered red flag transactions because of the sudden spike or dip.



NEXT STEPS

Financial institutions can set up auto alerts for suspicious activity, launch educational campaigns for customers and users, and facilitate consistent monitoring to reduce risk.

ABOUT DUCEN

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