Fraud Risk Dashboard - Excel Case Study

Project Type: Individual Portfolio Project

Problem

Financial institutions face ongoing threats from fraudulent transactions. Early identification of suspicious patterns is essential to prevent loss and protect consumers. While advanced tools exist for detecting anomalies, analysts should also be able to develop actionable solutions using accessible tools, such as Excel. This project focused on creating a clean, interactive dashboard using a structured synthetic dataset to identify potential fraud patterns.

Objective

- Create a rule-based fraud risk scoring system
- Use Excel to visualize transaction patterns and flag risky activity
- Design a user-friendly dashboard with dynamic interactivity

Solution & Process

1. Tools Used

Microsoft Excel

- PivotTables & PivotCharts
- Conditional Formatting
- IF Statements
- Calculated Columns
- Slicers
- Data Visualization/Storytelling

2. Dataset Overview

Worked with a clean dataset of 200 synthetic financial transactions. Key fields included transaction ID, customer name, amount, country, transaction type, time, and previous flags.

3. Fraud Scoring Logic

Developed a custom scoring system using:

- Transaction amount thresholds
- Specific transaction types
- Time-of-day analysis
- Country

Using Excel's formulas to automate score generation and conditional formatting to categorize risk.

4. Dashboard Design

- Created an Excel dashboard with:
    - Bar charts visualizing fraud risk levels (overall and by transaction type)
    - Trends across time of day
    - A donut chart to visualize the domestic or foreign transactions
- Added slicers for dynamic filtering

5. Structure & Organization

- Raw data kept on a separate worksheet
- Calculations and PivotTables placed on structured worksheets
- Dashboard isolated on a clean worksheet with consistent formatting and an intuitive color palette

Key Insights

- A small subset of transactions (~6%) scored a 5, presenting the highest risk
- Late afternoon to early evening transactions and wire transactions has a higher average risk score.
- Stakeholders could explore patterns interactively with slicers

Outcome

This project demonstrates how structured logic and Excel's built-in features can effectively support fraud detection efforts. It highlights my skills in fraud analytics, dashboard creation, and communication insights in a clean, professional format.

Future Improvements

- Scale project to 500+ transactions for deeper insight
- Recreate using SQL or Python for advanced analysis and model comparison
- Explore machine learning techniques to automate pattern detection

Project Link

GitHub: (Fraud_Risk_Dashboard) https://github.com/srdodson22