Fraud Detection Dashboard — Insights & Risk Analysis

1. Overview

This mini project analyzes fraudulent transaction patterns using an interactive Excel dashboard. The dashboard leverages slicers, KPIs, PivotTables, and charts to highlight how fraud is distributed across payment methods, merchant categories, and time periods. The goal is to identify high-risk zones and understand the behavioral patterns behind fraud occurrences.

2. Key Insights

A. Payment Method Analysis

Fraud is concentrated in specific payment methods, where some show high total fraud amounts while others show high average loss per incident. Low-frequency, high-loss fraud indicates targeted attacks, whereas high-frequency fraud reflects opportunistic behavior.

B. Merchant Category Behavior

A few merchant categories drive a majority of total fraud losses. Some categories experience severe per-case losses, showing that high-value fraud attempts are concentrated in specific segments. The comparison of fraud amount vs. average loss helps isolate both high-frequency and high-impact categories.

C. Time Trend Insights

The timeline slicer reveals clear spikes in fraud during certain periods. These spikes may be influenced by seasonal patterns, promotional cycles, or transaction volume peaks, helping organizations anticipate risk windows.

D. Fraud Distribution Patterns

Fraud is not random—clusters emerge across payment methods, categories, and time periods. High-value fraud occurs in low volume but contributes significantly to total losses, making it a critical focus area.

3. Key Takeaways

- Fraud loss is concentrated in specific payment method–category combinations.
- High-value fraud cases create bigger financial impact than high-frequency fraud.
- Time-based filtering highlights recurring high-risk periods.
- Risk clusters indicate targeted and organized fraud behavior.
- Both frequency and severity provide a complete view of exposure.

4. Conclusion

The dashboard provides a structured and interactive approach to exploring fraud patterns. It helps identify critical risk zones and supports informed decision-making. This project demonstrates Excel's capability for fraud analytics, insight generation, and reporting.