# Rule Engine Optimization

## Challenge

A global e-commerce platform processed millions of transactions daily through multiple payment gateways. However, their Payment Success Rate (PSR) had declined, leading to lost revenue and a surge in customer drop-off due to Convoluted rule logic, No rule hierarchy, Redundant and obsolete rules, Manual maintenance

## Objectives

To enhance PSR by at least 4% without compromising fraud prevention efficiency by streamlining and optimizing the rule engine.

## Approach

➤ Data Extraction & Profiling: Historical transaction and decline data from all gateways were extracted.
➤ Each failed transaction was mapped to specific rule triggers.
➤ Rule Trade-off Simulation: Built simulation models to test rule combinations under varying thresholds.

## Solution

➤ Automated Python Scripts were developed for: Rule threshold sensitivity analysis across >120 variables (AVS mismatch, BIN type, velocity checks, etc.) and for Impact measurement of each rule on PSR and fraud catch rate.
➤ Rule Hierarchy Framework: Introduced a multi-tiered rule structure
➤ Business KPI Dashboard: Fixed set of business KPIs to ease decision making and created a real-time Tableau dashboard to visualize: Rule-level PSR contribution

## Key Results

**6%** PSR improved by

**$5 M** Incremental revenue