

ISRO Strategic Launch Analysis & Forecast Report

1. Time-Series Payload Forecast (Future 6 Months)

The model forecasts a high payload volume, with an estimated **8,500 kg** in Q1 2026 and **9,200 kg** in Q2 2026, indicating aggressive scheduling.

2. Deep Dive: Reusability ROI

Simulating a 30% reuse saving model reveals significant long-term potential.

Metric	Value
Total Disposable Cost (Simulated)	\$10,550.00 M
Total Reusable Cost (Simulated)	\$9,500.00 M
Total Savings	**\$1,050.00 M**
Percentage Savings	10.00 %
Break-Even Point (Flights)	**3.5 Reusable Launches**

3. Scenario Simulation & Risk Analysis

A high-risk GSLV Mk III mission scenario was run using 10,000 Monte Carlo trials to assess financial exposure.

Metric	Value
Simulated Success Rate	72.00%
Expected Financial Loss (Risk)	**\$18.2 M**
Net Expected Financial Outcome (ROI)	\$85.0 M

4. Benchmarking and Competitiveness

ISRO maintains a cost-competitive position compared to global agencies.

Calculated Success Rate: **57.00%**

Estimated Cost per kg to LEO: **\$9,371 USD** (Highly competitive)

Recommendation

Accelerate the RLV program, as the break-even point is achievable within an aggressive launch schedule. Implement the advanced Stacking Classifier model ('isro_launch_model_v2.pkl') into operational launch risk review for a more accurate success probability (72% in the simulated scenario).