**Performance Monitoring Plan (PMP) for the LexisNexis Fraud Intelligence Model**

**1. Introduction**

This document has been structured to address the Model Risk Management (MRM) finding regarding ongoing performance monitoring (OPM) requirements for the LexisNexis Fraud Intelligence Model. The plan ensures that the model continues to effectively detect fraudulent activities while remaining stable, accurate, and compliant with regulatory requirements.

**2. Data Quality Monitoring**

* **Basic Statistical Checks:** Regular evaluation of mean, standard deviation, minimum and maximum ranges, percentiles, and ratios.
* **Kolmogorov-Smirnov (K-S) Test:** A two-sample non-parametric statistical test to measure distribution shifts. Its essential in monitoring customer transaction data, a significant shift in the distribution of transaction amounts might indicate issues such as errors in data collection or changes in customer behaviour.

**3. Key Performance Metrics**

The model's performance is assessed using the following key indicators:

**3.1 Discriminatory Power**

* **Area Under the Curve (AUC)** – Measures the model’s ability to distinguish between fraudulent and legitimate transactions.

**3.2 Model Stability**

* **Population Stability Index (PSI)** – Detects shifts in input feature distributions over time.

**3.3 Fraud Detection Performance**

* **Fraud Detection Rate (FDR)** – Proportion of flagged transactions that are confirmed as fraud.

**4. Performance Metric Thresholds & Breach Management**

The model's performance is monitored against predefined thresholds categorized as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Metrics Category** | **Green (Optimal)** | **Amber (Warning)** | **Red (Critical – Action Required)** |
| K-S | ≤0.10 | 0.10 - 0.20 | >0.20 |
| PSI | <0.1 | 0.1 - 0.25 | >0.25 |
| AUC | >0.85 | 0.75 - 0.85 | <0.75 |
| FDR | >80% | 60% - 80% | <60% |

**Threshold Breach Management Action Plan**

* **Green (Optimal):** No immediate action required; continue monitoring.
* **Amber (Warning):** Conduct a diagnostic review; determine potential reasons for performance decline.
* **Red (Critical - Action Required):** Trigger immediate remediation, which may include model recalibration, retraining, or adjusting risk score thresholds.

**4. Monitoring Frequency**

|  |  |
| --- | --- |
| **Monitoring Task** | **Frequency** |
| Performance metrics calculation | Monthly |
| Model stability checks (PSI) | Quarterly |
| Ad-hoc Monitoring (as per vendor guidance) | Weekly and Monthly |

**5.1 Regulatory Expectations**

* Regulations such as SR 11-7 (Federal Reserve) and OCC 2011-12 emphasize ongoing performance monitoring and periodic validation.

**5.2 Risk Management & Governance Requirements**

* Financial institutions follow risk-based governance policies that require periodic reviews.
* High-risk fraud models are typically assessed annually to align with best practices in Model Risk Management (MRM).

**5.3 Industry Standards and Vendor Recommendations**

* Vendors like LexisNexis, FICO, and SAS recommend annual validations as standard practice.
* This aligns with Basel II/III risk management principles and best industry practices.

**6. Corrective Actions**

If performance issues arise, the following actions may be taken:

* **Threshold Adjustment:** Modify risk score cutoffs to optimize fraud detection.
* **Feature Engineering Updates:** Introduce new transaction patterns or behavioral indicators.
* **Recalibration or Model Retraining:** Use fresh fraud cases and legitimate transactions to retrain the model.
* **Alternative Model Evaluation:** Compare with rule-based fraud detection or competitor models.