AML Data Analytics - An Introduction

AIBA September 2013 Quarterly Meeting
What is AML Data Analytics?

“An emerging methodology in the field of AML/CFT for performing various types of detailed quantitative analysis to determine soundness of the AML systems, provide extensive insights to data thru dash-boarding and visualization, and support the tuning and optimization of the AML systems for enhancement.”
Why is it needed?

- Increased focus on Model Validation & Quantitative Analysis by regulators
- Challenges with proprietary vendor systems
- Improvements to Transaction Monitoring
  - Efficiency
  - Effectiveness
  - Controls
- Gain control over enterprise wide data
- Being Proactive versus Reactive
Application of AML Analytics

• Model Validation
  ▪ Input validation
  ▪ Process validation

• Understanding the Data (Input Validation)
  ▪ Data Profiling
  ▪ Data Quality Analysis

• AML Rules Implementation and Tuning (Process Validation)
  ▪ Acceptance Testing
  ▪ Threshold analysis
  ▪ Below the line testing
  ▪ Above the line testing
  ▪ Capacity Planning
Application of AML Analytics

• Reporting
  ▪ Dashboarding
  ▪ Trend analysis
  ▪ Productivity
  ▪ Effectiveness
A model consists of three components:

- An information input component, which delivers assumptions and data to the model;
- A processing component, which transforms inputs into estimates; and
- A reporting component, which translates the estimates into useful business information.

"The term *model* refers to a quantitative method, system, or approach that applies statistical, economic, financial, or mathematical theories, techniques, and assumptions to process input data into quantitative estimates."

OCC and Federal Reserve – “Supervisory guidance on model risk management” (OCC 2011-12; SR 11-7)
Model Risk Management

Model Optimization & Tuning
Model Validation
Model Implementation
Model Catalog
Model Validation

• Models relevant to AML/CFT:
  • Customer Risk rating models
  • Suspicious Activity Detection models
  • Sanctions Filtering models
Model Validation

- Suspicious Activity Detection models
- Input
  - Customer, Account, Activity data
  - External data
  - Thresholds and parameters
- Processing
  - Algorithms/logic including data mining algorithms
  - Mathematical/Statistical calculations
- Reporting
  - Alerts/cases
Data Profiling & Quality

• Data profiling is the process of analyzing an existing data source to provide statistics and information about the data.

• Demonstrates proper understanding of the source data for Risk Rating and Transaction Monitoring

• Examples
  • Distribution of customers by risk class
  • Distribution of customers by industry code
  • Distribution of transactions by country
  • Distribution of transactions by amount

• Exposes data quality issues if any
  • Examples
    • Incorrect data mapping from core systems (Parties on wire transfer)
    • Lack of critical data for purposes such as risk rating, monitoring
AML Rules Tuning

- AML monitoring systems are driven by a set of rules or models that capture known typologies or scenarios that are identified through industry sources (FATF), the AML risk assessment and historical SAR filings.

- Scenario Testing
  - Test input data, detection process and output alerts
  - Analyze Data Quality
  - Analyze relevance of models to business or transaction history
  - Compare results from analytics to monitoring system
Threshold Analysis

- A key part of implementation of AML rules/models is determining the thresholds based on the risk assessment and historical data to determine what is normal activity and identify the outliers.
- Distribution of per transaction amount
- Distribution of aggregate transaction amount
- Distribution of key parameter values for Rule/Model
Above & Below the line testing

• Above the line testing
  • The process of testing of the rules/models just above the parameter settings chosen.
  • Identifies whether the threshold can be safely raised.
  • Thorough analysis of this subset is required before raising threshold

• Below the line testing
  • The process of testing of the rules/models just below the parameter settings chosen.
  • Identifies the alerts that would not be produced by the rule/model.
  • Thorough analysis of this subset is required to ensure that alerts of interest are not missed
The AML department should be staffed adequately to manage the workload of alerts/cases. The following inputs are required for proper capacity planning:

- Expected volume of transactions (increase or decrease) over time
- New products/services to be rolled out
- Projected volume of alerts/cases
- Productivity level of staff
- Hiring plans
- Current backlog if any
Reporting

- **Dash boarding**
  - Cases pending review/approval
  - Customer Due Diligence pending acceptance
  - Watchlist filtering cases by source

- **Trend Analysis**
  - Cases generated trend
  - SAR filing trend

- **Productivity/effectiveness**
  - Rule effectiveness report
  - Operator productivity report
So, how do you get started?

- Tool selection
  - Tableau
  - SAS
  - Spotfire
  - Etc.
- Staffing/Training
- Vendor/consultant selection
  - Compliance product vendor
  - Independent third party
When to do it?

• Initial rollout of AML System
• Major events
  • Mergers/Acquisitions
  • Rollout of New products/services
• Deployment of new rules/models
• Conversion of systems
• Periodic Review and tuning
  • Annual/Semi-annual
Data Profiling - Examples

Data Profiling - Distribution of customers by risk class

Transaction Count by Risk Class

Customers by Risk Class

Transaction Amount by Risk Class
### Data Profiling - Examples

#### Customer Risk Rating – Risk Factor Comparisons

<table>
<thead>
<tr>
<th>High Risk Product</th>
<th>Size of Relationship</th>
<th>Country</th>
<th>Book Transfers</th>
<th>ACH Activity</th>
<th>Domestic Wire</th>
<th>Cash Activity</th>
<th>Check Activity</th>
<th>International Wire</th>
<th>High Risk Industry</th>
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Data Profiling - Examples

Transaction Distribution by Customer Country
Data Quality - Examples

Customers by Industry Code
(top 40)
### AML Rules Tuning - Examples

#### Analysis of key parameter values for Multiple Jurisdictions

<table>
<thead>
<tr>
<th>Description</th>
<th>No. of Countries</th>
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<tr>
<td>all country</td>
<td>49270</td>
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<tr>
<td>all country minus US</td>
<td>48817</td>
</tr>
<tr>
<td>Monitored country</td>
<td>25001</td>
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<tr>
<td>Monitored country minus US</td>
<td>11535</td>
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<td>all country minus US</td>
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<tr>
<td>Monitored country</td>
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<tr>
<td>Monitored country minus US</td>
<td>126</td>
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<th>Description</th>
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<tr>
<td>all country minus US</td>
<td>18766</td>
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<tr>
<td>Monitored country</td>
<td>18039</td>
</tr>
<tr>
<td>Monitored country minus US</td>
<td>18039</td>
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</table>

**Note:** The values represent the number of countries monitored under different descriptions.
AML Rules Tuning - Examples

Analysis of key parameter values for Keywords

High Risk Keywords

- For further credit: 333
- Casa: 224
- Gift: 166
- Cambio: 161
- Gamb: 24
- Society: 12
- Missile: 8
- Omit: 6
- Remitter: 4
- Contribution: 4
- on behalf of: 4
- Ministry: 4
- Embassy: 4
- Government: 3
- Diplomat: 2
- Yourselves: 2
- Brotherhood: 1
- Admiral: 1
- Donation: 1
- FFC: 1232
- Foundation: 166
- FBO: 30
### Thank You

<table>
<thead>
<tr>
<th>Gokul Kallambunathil</th>
<th>Mahesh Viswanathan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sr. Vice President</strong></td>
<td><strong>Sr. Vice President</strong></td>
</tr>
<tr>
<td><strong>732.527.0524 Ext 206</strong></td>
<td><strong>732.527.0524 Ext 201</strong></td>
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<tr>
<td><a href="mailto:Gokul@telavance.com">Gokul@telavance.com</a></td>
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