METAVANTE WHITE PAPER

Case-Scoring: Applying Risk to Suspicious Activity Case Management

Christopher Price, CAMS, AMLP
AML Compliance Consultant

Geff Vitale, CAMS, AMLP
AML Training Manager

Gary Bakker
President of Metavante
Risk and Compliance Solutions

1-800-822-6758

Table of Contents

Metavante®

1-800-822-6758

I. Introduction

Anti-money laundering (AML) programs are produced, developed, implemented, and amended based upon measurements of qualitative and quantitative risk. The measurement of risk is a regulatory requirement which is performed annually as an Institutional AML Risk Assessment. Risk measurement is also a part of an institution's customer risk assessment process and the resulting profile-based suspicious activity monitoring. The utilization of a risk-based approach to the management of suspicious activity cases will help to identify the severity of the case and improve the efficiency of the investigative process. This paper will discuss the application of risk-based management to the review of suspicious activity cases.

II. Case Generation

In general, cases are generated by customer activity deviations from profiles, peer groups, parameters in a rules-based monitoring system, or any other monitoring technique. These monitoring techniques may produce more cases than necessary due to data quality, the monitoring system, and the type of activity being monitored. Without a method of organizing and managing cases according to risk, potentially high-risk cases may go unnoticed, while too much effort may be spent on low-risk cases. Case-scoring is the process of determining the priority of the cases as a function of both the inherent risk exposure of the institution (as identified in the Institutional AML Risk Assessment) and the implemented monitoring methodologies (aka case types). Highly severe cases will have a high score, while lower-risk cases will be scored lower.

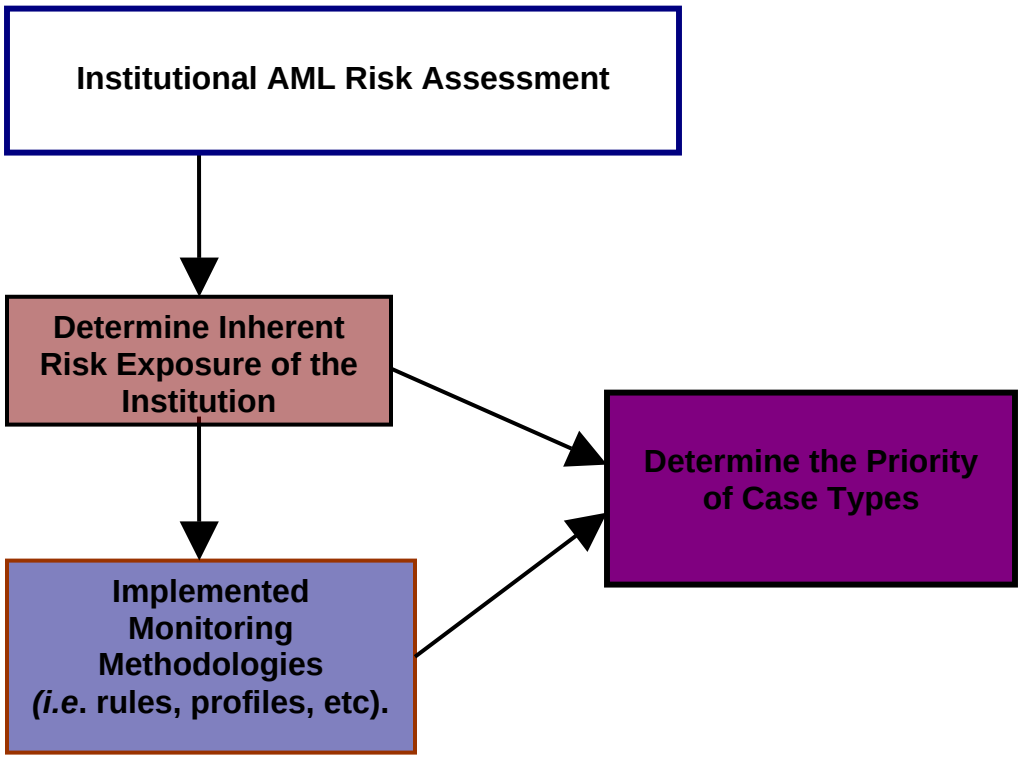
Each case type is identified by the monitoring methodology that generated the case. For the purpose of our example in this paper, the following five case types will be defined:

- Exceed Amount or Count Profile,
- Country Profile,
- Peer Profile,
- Exceed Currency, and
- Rule.

Figure 1 (on page 2) is a flow chart of how the inherent risk of each case type can be determined.

This alone is not enough to prioritize the severity of the cases, because if there were 100 cases of each type, what would determine the order that you would review them? A very small deviation from an anticipated profile may not pose as large a risk to the institution as a deviation of a rule monitoring international wires. Therefore, each case type will need to have a sub-classification of risk that is determined by either the monitoring scenario or the deviation from an anticipated amount.

Figure 1



For the purpose of this paper, the following are the details of each case type:

I. EXCEED AMOUNT OR COUNT PROFILES

The analysis of the activity of a customer and the resulting profile will take into consideration the entire customer relationship. A similar approach can be applied to cases created from the other types of monitoring and profiling. In this paper, profiles are formed using one of the following:

1. An average, maximum, or standard deviation of customer activity (dollar amount and count) over a pre-determined period of time (ex. 3 months, 6 months, 1 year); or
2. For new customers without a transaction history, an initial input of expected incoming and outgoing transactions as collected during the Know-Your-Customer (KYC) account-opening process.

Cases can be generated from profiles created at the customer level, account level, or activity level. At the customer level, a case is generated if one or more of the following is exceeded: the total credit amount, total debit amount, total credit count, total debit count, or any combination. This includes all accounts owned by the customer. The same holds true for account-level profiles; however, only the account credit and debit criteria are considered, rather than the total customer relationship. An activity level profile for a specific transaction type, such as check deposits and check withdrawals, or wire transfer credits and wire transfer debits, are monitored in relation to either the customer or account.

II. COUNTRY PROFILES

Country profiles generate a case for a customer, deviating from the list of countries where the customer is expected to do business.

III. PEER PROFILES

Peer profiles generate a case for a customer if they deviate from a profile established from a group of peers. "Peered" customers are based on a group of similar customers, or "peers," whose attributes and transaction behavior are comparable. A case is generated when a peered customer's transaction activity exceeds the peer group's expected activity counts and amounts.

IV. EXCEED CURRENCY

A case is generated if the customer exceeds the currency transaction-reporting amount resulting from cash deposits or cash withdrawals in a single day.

V. RULE

A rule is logic that analyzes activity for a specific pattern; any number of conditions or scenarios can be utilized as part of the AML monitoring program. A case is generated if the customer's activity deviates from the underlying user-defined parameters for a specific monitoring scenario.

FREQUENCY FACTOR

In using profiles, customers have already been placed into risk classes based upon criteria (risk factors) culled from existing Know-Your-Customer (KYC) information. (Please see white paper "Customer Risk Assessment" available on Metavante.com). Furthermore, AML Risk Management has the option to base the frequency of case generation on customer risk. For example, an institution can consider generating and reviewing high-risk customer cases on a monthly basis, while having the option to generate cases quarterly for other lower-risk classes.

Cases generated as a result of a violation of a business-analysis rule, commonly referred to as a rule, typically have parameters defined by the user to generate cases at a particular frequency. Thus, depending upon the scenario and its inherent severity, the user has the option of generating cases daily, weekly, monthly, quarterly, semi-annually, etc.

Other case types may result in a daily generation due to the type of scenario being monitored, i.e., cash transaction reporting.

III. Factors to Consider in Scoring Cases

The process of case-scoring is similar to the process of risk-assessing customers, except that factors and weights are applied to cases rather than customers. This risk assessment is used to determine the severity of the case. The factors utilized for this paper in scoring cases are illustrated in Figure 2:

Figure 2

Factors	Weight
Customer's Risk Class	
Exceeded Amount or Count	
Rule Parameter Deviation	
Country Deviation	
Exceeded Currency Reporting	
Peer Group Deviation	
Number of Previous Cases	
Number of Previous CTR or SAR Filings	
Total	100%

Each factor receives a weight expressed as a percentage, with assigned percentages totaling 100%. Factors that are not chosen to be used are set to zero. Although the factor weights add up to 100%, only the factors that have a score as a result of the case are used in the scoring calculation. For example, if there was no previous SAR filed, the score for this factor would be zero, and it would not be included in the scoring calculation, because anything multiplied by zero is zero. This increases the significance of the other factors that are included in the calculation. At most, four factors can be considered for any case: Customer's Risk Class, one of the five case types, Number of Previous Cases, and Number of Previous CTR or SAR Filings.

Each chosen factor, in turn, has specific results. Each possible result receives a numeric rank, which we will refer to as a Result Score Contribution. For example, if the Customer's Risk Class is one of the scoring factors, and the actual risk classification structure is low, medium, and high, then possible result score contributions for the underlying risk classes could be as follows:

Low – 25 Medium – 50 High – 100

The Result Score Contribution is multiplied by the weight that the scoring factor receives, resulting in a total factor score. Figure 3 illustrates the calculation for a customer with a High risk:

Figure 3

Case-Scoring Factor	Weight	Possible Results	Result Score Contribution
Risk Class	20	Low	25
		Medium	50
		High	100

The total factor score is 20 x 100 = **2,000**

Continuing with a monitoring scenario utilizing only a customer-level profile, the only case type in such an instance would be Exceeded Amount or Count. See Figure 4:

Metavante®

Figure 4

Factors	Weight
Customer's Risk Class	20
Exceeded Amount or Count	50
Rule Parameter Deviation	0
Country Deviation	0
Exceeded Currency Reporting	0
Peer Group Deviation	0
Number of Previous Cases	10
Number of Previous CTR or SAR Filings	20
Total	**100%**

In our scenario, the compliance user has determined that the Risk Class scoring factor will receive a weight of 20%. That leaves 80% of weighting for the remaining factors. The next factor is Exceed Amount or Count, which receives a weight of 50%; the other case types are set to zero. Number of Previous Cases receives a weight of 10%, and the Number of Previous SAR or CTR filings are weighted at 20%.

Next, the result score contributions are defined for each factor. Take the Risk Class factor from Figure 2, which illustrates that a higher risk results in a higher score.

For the case type Exceed Amount or Count, the percentage of deviation over the profile values determines the result score contribution applied, as illustrated in Figure 5. Using the percentage of the deviation instead of the amount of the deviation from a profile represents the proportion of the total dollar value of transactions, which equalizes the disproportionate dollar value differences between individuals and businesses. If an individual deviates by 10% it may be the result of $100, as compared to a business deviating by 10% which may be the result of $1,000. Using a percentage of deviation results in the two being scored the same.

Figure 5

Case-Scoring Factor	Weight	Possible Results	Result Score Contribution
Exceed Amount or Count	50%	1-5	0
		6-25	25
		26-75	50
		76-150	100
		151+	200

The next factor to be considered is the Number of Past Cases. In our scenario, the compliance user has determined that the historical number of cases generated for a customer carries a weight of 10%. The record retention schedule of the Bank Secrecy Act is 5 years, so our scenario considers cases that have been generated from the present to 5 years ago. As illustrated in Figure 6, a customer that has generated from 1 to 5 cases within this period receives the lowest score of 250; customers with 6 to 20 cases receive a contribution score of 500; and customers with 21 or more cases receive a contribution score of 900.

Figure 6

Case-Scoring Factor	Weight	Possible Results	Result Score Contribution
Number of Previous Cases	10%	1-5	250
		6-20	500
		21+	900

The last factor for our sample Case-Scoring Model is Number of Previous SAR filings. If one SAR or CTR has been filed in the past 5 years, the contribution score is 250; if two SARs or CTRs have been filed, the contribution score is 500; and three or more SARs or CTRs receive a contribution score of 900. Figure 7 illustrates this:

Figure 7

Case-Scoring Factor	Weight	Possible Results	Result Score Contribution
Number of Previous SAR Filings	20%	1	250
		2	500
		3+	900

Now we illustrate some examples of customer case-scoring.

Example 1:

Customer A is in the High-Risk Class and receives a result score of 2,000 for this factor. The review threshold for the customer profile is $12,350 and the activity aggregated to $14,899.53, which resulted in a deviation of $2,549.53 for this review period. This is a 20.6% deviation, which receives a result score of 1,250. Customer A has generated eight cases over the prior 5 years, which receives a result score of 5,000. There has been one SAR filing on Customer A in the prior 5 years, which receives a result score of ,5,000. Figure 8 illustrates the case-scoring for the case generated by Customer A:

Figure 8

Case-Scoring Factor	Weight	Results	Result Score Contribution Weight x Numeric Result
Risk Class	20	(High) 100	2,000
Exceed Amount or Count	50	(20.6% deviation) 25	1,250
Number of Previous Cases	10	(8 cases) 500	5,000
Number of Previous SAR Filings	20	(1 SAR Filed) 250	5,000
Totals	100		13,250

Case Score = Total Result Score / Total Weight = 13,250/100 = 132.5 = **133**

Customer A's case is assigned a score of 133. Depending upon how the other cases score will determine this case's order in the list.

Example 2:

Customer B is in the Low-Risk Class, has a review threshold of $4,500, and has deviated from this threshold by $7,469.77. This is a 166% deviation; this customer has generated 12 cases over the prior 5 years, and there have been no SAR filings on this customer in the prior 5 years. Figure 9 illustrates the case-scoring for the case generated by Customer B:

Figure 9

Case-Scoring Factor	Weight	Results	Result Score Contribution Weight x Numeric Result
Risk Class	20	(Low) 25	500
Exceed Amount or Count	50	(166% deviation) 200	10,000
Number of Previous Cases	10	(12 cases) 250	2,500
Totals	80		13,000

Case Score = Total Result Score /Total Weight = 13,000/80 = 162.5 = **163**

In Customer B's case, since no SARs were filed, the factor Number of Previous SAR Filings is not aggregated in the calculation; however, the higher deviation from the profile resulted in this case being higher in the list of cases to review.

IV. Incorporating the Other Case Types into the Scoring Model

From the remaining four case types, we will introduce the Rule case type into the scoring model. In our original example, we only considered Exceed Amount or Count as a case type, and thus it received a weight of 50%. Given that the entire model must add up to 100%, the weight allocated to the other factors will need to be redistributed. For this paper, the 50% originally applied to Exceed Amount or Count will be divided between Exceed Amount or Count and the Rule Case Type; the other factors' weights will remain the same. In contrast to profile-based monitoring, rules address the specific risk exposures of the institution to money laundering and terrorist finance. As such, rules carry greater monitoring significance, and thus receive a heavier weight relative to profiles. Therefore, we will apply a weight of 20% to Exceed Amount or Count, and apply the remaining 30% to the Rule case type. Figure 10 illustrates the Rule case type factor, in which possible results are expressed as the type of rule being used instead of a percentage of deviation.

Figure 10

Case-Scoring Factor	Weight	Possible Results	Result Score Contribution
Rule	30%	Dormant Account Activity	25
		Structuring by Customer	50
		Multiple Originators Sending to a Single Beneficiary	50
		A Single Originator Sending to Multiple Beneficiaries	50
		High-Volume Wires for Business and Other Entities	75
		High-Volume Wires for Individuals	75
		High Cash Volume for Businesses and Other Entities	75
		High Cash Volume for Individuals	75
		Cash-In Wire-Out Velocity	100
		Wire-In Cash-Out Velocity	100
		PEP Customer Activity	300
		High-Risk Country	300

Similar to our examples 1 and 2, we will now provide examples of case-scoring for Rule case types.

Example 3:

A case has been generated for the rule High Volume Wires for Individuals, which receives a result score of 2,250. The underlying Customer C is in the Medium-Risk Class, which results in a score of 1,000. In the prior 5 years, 20 cases have been generated for this customer, equating to a result score of 5,000. Two SARs have been filed on this customer in the prior 5 years, receiving a result score of 10,000. Figure 11 illustrates the resulting case score:

Figure 11

Case-Scoring Factor	Weight	Results	Result Score Contribution Weight x Numeric Result
Risk Class	20	(Medium) 50	1,000
Rule	30	(High-Volume Wires for Individuals) 75	2,250
Number of Previous Cases	10	(20 cases) 500	5,000
Number of Previous SAR Filings	20	(2 SARs) 500	10,000
Totals	80		18,250

Case Score = Total Result Score / Total Weight = 18,250/ 80 = 228.125 = **228**

Example 4:

A case is generated from a Dormant Account rule, receiving a result score of 750. Customer D is in the Low-Risk Class, receiving a result score of 500. There have been no previous cases generated; and therefore, no previous SAR filing on Customer D. Figure 12 illustrates the case-scoring for this case:

Figure 12

Case-Scoring Factor	Weight	Results	Result Score Contribution Weight x Numeric Result
Risk Class	20	(Low) 25	500
Rule	30	(Dormant Account) 25	750
Totals	50		1,250

Case Score = Total Result Score /Total Weight = 1,250/50 = **25**

Based upon the inherent risk of this case, its review can be done after the cases with a higher severity are addressed.

Example 5:

In applying the same case-scoring model as in Example 4 to Customer A in Example 1, the resulting case score would be:

Figure 13

Case-Scoring Factor	Weight	Results	Result Score Contribution Weight x Numeric Result
Risk Class	20	(High) 100	2,000
Exceed Amount or Count	20	(20.6% deviation) 25	500
Number of Previous Cases	10	(8 cases) 500	,5000
Number of Previous SAR Filings	20	(1 SAR Filed) 250	5,000
Totals	70		**12,500**

Case Score = Total Result Score/Total Weight = **12,500/70 = 178.57 = 179**

By comparison of Customer A, with the very same scenario applied to the first case-scoring model in Figure 8 vs. the case-scoring model in Figure 13, we see that the lower weight applied to Exceed Amount or Count (20%) in Figure 13 actually results in a Higher case score than Figure 8, where the weight applied to Exceed Amount or Count was higher (50%).

This illustrates the *inverse* relationship between case scores and case-scoring model complexity. By increasing the number of factors to be considered for weighting, the following conditions arise:

1. The weight for case type is distributed between the multiple case types considered; i.e., Exceed Amount or Count and Rule in our examples.
2. Since only one case type can be considered in any one case generated, the remaining factors have a lower weight than if fewer factors were considered in the model. This, in turn, results in a lower total weight as the divisor.

With a lower total weight to divide by, the result is a higher case score. Thus, the greater the number of factors resulting in a score, the higher the case score.

V. Applying Case-Scoring to Workload

Utilizing case-scoring to determine which cases to review first reduces the risk to the institution, in that the more severe cases will be "worked" before a low-risk case. With most monitoring systems, there is usually what we will term "noise." These are cases generated because a customer exceeded their profile by $1 or any other condition that generates cases that are not a significant risk. By employing case-scoring and reviewing the cases in conjunction to their score, a minimum number becomes apparent. Cases under this number pose little or no risk and would normally result in the waiving of the case. After testing and proving that all cases under this number can be waived, the institution can assume each monitoring period that these cases will be waived and do so in mass, reducing the total number of cases requiring review. However, any changes to the case-scoring model will require this minimum number to be tested and proven again.

As for a customer who frequently generates cases but falls under the minimum number, at some point they will eventually move up enough in severity, forcing themselves to be reviewed.

VI. Conclusion

By applying a case-scoring methodology to the review of cases, those cases that pose a higher risk to the institution will be given the priority they require, while the lower-risk cases are handled appropriately. It also factors in conditions between case types so that no single case type is always first if a condition in another case type poses a higher risk.

Case-scoring can also be utilized to eliminate the need to review cases that are of no risk to the institution but are generated as a result of the monitoring scenario. The waiving of cases under a specified case score can reduce workload and allow the case reviewers to focus on the cases that need the most attention.

Christopher Price, CAMS, AMLP
AML Compliance Consultant

Geff Vitale, CAMS, AMLP
AML Training Manager

Metavante®