ENHANCING AML EFFICIENCY AND EFFECTIVENESS

ARTIFICIAL INTELLIGENCE TRANSFORMS THE RULES OF THE GAME

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INTRODUCTION

In *Fighting Financial Crime Amidst Growing Complexity*, Celent analyzed the challenges with current practices in Anti-Money Laundering (AML) operations, and highlighted new tools and technology such as artificial intelligence (AI), machine learning (ML), and robotic process automation (RPA) that can help overcome those challenges. This report discusses how banks are adopting these solutions and their benefits, and offers key lessons for those considering embarking on this journey.

The two reports were commissioned by SAS Institute, while Celent kept full editorial control. In addition to Celent’s extensive knowledge base in risk and compliance, this research benefited from discussions with compliance professionals from eight banks.

ENHANCING EFFICIENCY AND EFFECTIVENESS IN AML

Financial institutions have started using RPA, AI, and machine learning tools in AML operations. Experience from initial use cases suggest potential for significant improvements in efficiency and effectiveness, as can be seen from Figure 1 and within the following discussion.

**Figure 1: AI, RPA Tools Offer Significant Benefits Across AML Components**

<table>
<thead>
<tr>
<th>AML Components</th>
<th>On-boarding and Risk Assessment</th>
<th>Detection</th>
<th>Investigation</th>
</tr>
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<tbody>
<tr>
<td><strong>AI Applications</strong></td>
<td>• Aggregate client information</td>
<td>• List management; name matching algorithms</td>
<td>• Link and graph analysis</td>
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<td></td>
<td>• UBO analysis</td>
<td>• Text mining for transaction screening</td>
<td>• Alert enrichment, aggregation, prioritization, auto escalation, closing</td>
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<td></td>
<td>• Identification of risk attributes; intelligent risk segmentation</td>
<td>• Scenario authoring for complex patterns</td>
<td>• Automated report filing</td>
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<td>• Regulatory analysis</td>
<td>• Expected behavior, anomaly detection</td>
<td>• Adverse media analysis</td>
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<td>• Trade finance document analysis</td>
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<td>• Compliance assistants</td>
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<td></td>
<td></td>
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<td>• SAR, CTR analysis</td>
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<th>Benefits</th>
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<tbody>
<tr>
<td><strong>On-boarding and risk assessment</strong></td>
<td>• Holistic customer profile</td>
<td>• Better screening results</td>
<td>• Visual discovery of patterns</td>
</tr>
<tr>
<td></td>
<td>• Risk based approach to AML</td>
<td>• Detect hidden patterns</td>
<td>• Holistic investigation; auto escalation, closing of cases</td>
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<td></td>
<td>• Productivity improvement through intelligent segmentation</td>
<td>• Less volume and better quality of alerts</td>
<td>• Better SAR conversion rate</td>
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<td></td>
<td>• Alerts prioritized by risk score</td>
<td>• Learning and feedback</td>
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<td></td>
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<td></td>
<td>• Cost reduction, efficiency improvements, better regulatory compliance</td>
</tr>
</tbody>
</table>

Source: Celent

**On-boarding and risk assessment** can be made more intelligent using the new tools.

- **Machine learning** can be used to identify critical risk attributes and patterns based on a bank’s customers and their past behavior. This helps in creating “profiles” of customers and their peer groups that can be used to improve risk assessment of

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new clients, and potentially prevent risky actors at the onboarding stage before they engage in illicit activities.

- The profiles can also be used in the monitoring process or for additional evidence gathering in case investigation. Synthetic profiles can be created of counterparties that are not a bank’s customers, which can be particularly helpful in correspondent banking.

“We did a data de-duplication exercise of customer accounts using intelligent automation. This allows us to move away from a siloed approach, and monitor customer activity across business lines. We will next aggregate information across financial crime compliance applications, such as fraud and AML.” — Regional American bank

- Intelligent risk segmentation improves productivity by ensuring alerts are proportionately distributed according to risk, thereby improving suspicious activity report conversion rates.

“We worked with an external firm and used cluster analysis to segment our customers; we were able to reduce false positives by 40% and enhance productivity levels; it also improves monitoring coverage across our client base.” — Tier 1 Asian bank

**Detection** process can be made more powerful using AI and ML techniques. Advanced matching algorithms, complex rule based scenarios, and conditional and auto adjustable thresholds improve detection quality and output.

- **Machine learning can leverage historical outcomes, and automatically adjust thresholds to reduce false positives.** Learning can be frequently and dynamically fed back to the system for regular improvement.
- Machine learning can be used to identify common and expected patterns, which can then help track anomalies or false negatives—potentially suspicious activities that are not detected by rules-based detection engine. The advanced techniques need to be carefully evaluated, monitored, and governed with appropriate oversight and controls in place.

“We worked with a fintech player and used machine learning algorithms for peer analysis and anomaly detection, which revealed interesting outliers that we were previously not capturing.” — Tier 1 global bank

- Fine segmentation and advanced algorithms generate fewer and better-quality alerts that can be scored and prioritized according to risk using intelligent automation.
- Machine-identified likely false positives or low-risk alerts can be put on a “hibernation mode” allowing the machine to continue to gather more information related to the case and trigger an alert when relevant additional information is found.

“We worked on a proof of concept (PoC) for scoring and prioritizing alerts leveraging advanced analytics; it revealed a significant proportion of alerts can be auto-closed or resolved with minimal supervision.” — Regional Asian bank

**Investigation and case management** can be made more efficient using RPA and AI.

- **Prioritized alerts can be efficiently managed** through auto escalation and auto or low-touch closing. Alerts can be grouped and rolled up to an account or customer level, and additional information can be automatically sourced from internal and external sources to enrich alerts and cases and improve investigators’ productivity.
Productivity can be further improved through intelligent visualization tools for fast discovery, holistic analysis by taking advantage of additional information sources, and compliance chatbots for quick answers to common questions.

Cognitively capable systems can learn from prior investigations and suggest potential workflow processing steps to investigators for the case at hand.

“We are automating parts of the investigation process using automated search and querying tools, embedding geographic information on a visual map, extracting information and insights from images, payment messages, and documents through AI, and auto populating data in investigation and reporting; we see there is potential for upward of 30% reduction in case review time.” — Tier 1 global bank

Learning from resolved case decisions is crucial to harnessing AI to continuously improve onboarding, detection, and investigations. Combining the human experience of investigators with AI allows the system to make recommendations or improvements to production processes, and enhances overall efficiency and effectiveness of AML programs, contains costs, and ensures superior compliance with regulations.

CONSIDERATIONS FOR AI ADOPTION

Pilots and early use cases of adoption highlight important lessons for banks considering embarking on the AI journey.

MODEL RISK GOVERNANCE

Regulators have strict requirements regarding explainability, determinism, and ease of understanding AML models. Therefore, model governance, validation, and documentation are paramount, and banks need to clearly explain how the new models work and reproduce results with the same input data sets.

For some AI techniques that use variable weights or parameters, or iterative processes influenced by initial conditions, explainability and reproducibility may not be straightforward. Similarly, establishing checks and controls, ensuring auditability and quality assurance processes, evidencing outcomes, and associated documentation for decisions analysts make can be onerous with AI tools. Solution providers are devising means to help banks overcome the challenges, such as visualization tools with variable score cards that provide investigators the relevant attributes used by the model and why they were chosen.

“Model governance is a huge pain point; we want to avoid new models because we cannot keep up with the rigors; we are not doing business to file paperwork.” — Regional US bank

“Model governance is burdensome, but it has not been a showstopper for us in trying out advanced analytical solutions.” — Tier 1 global bank

DATA AND INFRASTRUCTURE MANAGEMENT

Data is essential for running analytics, especially for AI analytics because it involves large volumes and different types of data, as well as rigorous training and validation procedures.

Data quality and completeness are critical issues because full benefit of AI solutions can only be realized with complete and quality information. For example, it is difficult to create a complete customer profile, or conduct peer analysis, without
having a holistic customer view. Ensuring lineage, consistency, and accuracy of data is a high priority in AML operations, and will be more so for using AI solutions.

- Approach to data storage, querying, and computing, which traditionally heavily relied on relational databases, may not be suitable for meeting exponential scalability needs of AI in a cost-effective way. Therefore, **how data is stored, queried, and processed will be a critical consideration in AI adoption.**

- Banks have undertaken significant efforts to improve enterprise data management capabilities in the last 18–24 months, with leading banks increasingly adopting big data architectures. While these are typically enterprise-wide projects, compliance divisions have pursued data management strategies to meet the expectations of “knowing your customer’s customer.” Some banks are trying to create a sliver out of enterprise data warehouses for compliance functions, while others are looking to create data marts focusing solely on anti-financial crimes functions.

The advanced analytical tools may require higher computing power, and therefore banks need to be careful about using them optimally. For example, adverse media or network analysis may be used only for enhanced due diligence (instead of for all transactions or clients) for optimal resource use without losing effectiveness of an AML program.

**IMPLICATIONS FOR EXPERTISE AND SOURCING**

These issues coupled with the fact that AI and machine learning require advanced statistical and computational knowledge mean **banks will need to transform their talent and resource mix** for developing and training new models, managing systems and infrastructure, and maintaining them on an ongoing basis.

“Our compliance team considered peer group analysis for anomaly detection, but business users did not understand it, so we had to discard the idea.” — Tier 2 North American bank

A few leading banks have the resources and capabilities to build teams of data scientists, but this is an expensive proposition for others, especially small and medium-size players. Even at leading banks, the focus of data science teams is primarily in building differentiating capabilities in the front office, and it only occasionally spills over to non-core areas such as compliance. Many banks therefore expect technology companies to make analytics easy to use and consumable by business users in a “point and click” manner instead of requiring them to write code or build models. We expect banks to rely on external providers with domain-specific expertise to help them realize the value of AI while helping them navigate the challenges discussed above.

**OUTLOOK: AS FAR AS AI CAN SEE**

As highlighted in Figure 2, early adoption of RPA, AI, and ML solutions is being led by large global and regional banks that are technologically sophisticated and have large and complex operations that can significantly benefit from their use. The easiest option is RPA, which is typically the first step in the journey, while leading banks are already using AI solutions such as link analysis, clustering, and natural language processing.

Success stories in the innovation phase should encourage others, who are still taking a wait-and-watch approach, to shed their inhibitions and start experimenting with the new technology. In the next phase of wider adoption, we expect early adopters to move on to more complex tasks such as alert prioritization, auto escalation, low-touch alert closing, scenario tuning, and conditional thresholds.
With growing maturity of users and solution providers, we expect leading banks to expand scope and conduct even more complex tasks such as using machine learning algorithms in detection engines, auto-alert closing, and case investigation procedures. Leading banks are already considering a champion-challenger approach where they will use ML-based detection models in parallel to rules-based systems, and leverage learning and feedback to improve AML process efficiency.

Figure 2: Adoption of AI Solutions Will Be Tactical and Led by Large Banks

Regulators in important jurisdictions are encouraging adoption of new technology, engaging with firms that are at the forefront of its adoption, analyzing results, and learning from pilots and proof of concepts. In some cases, they are themselves using these techniques for monitoring their markets. An important step in the fight against money laundering would be to find mechanisms for sharing information and intelligence among banks and regulators, which is currently lacking. This will improve banks’ AML operations through better understanding of criminal behavior, and allow them to train their AI models with more and better-quality data, which is essential for AML’s success.

Banks, solution providers, and regulators are undergoing an educational journey regarding how to formulate model governance requirements for AI. Regular industry dialogue, sharing of results and findings from pilots and use cases, and similar engagements should ease regulatory concerns and accelerate adoption.

PUTTING AI INTO ACTION

The trend emerging from the pilots and early use cases indicates banks are preferring tactical, incremental, and hybrid approaches to adopting RPA, AI, and ML solutions.

- During this phase of innovation, as referenced in Figure 2, institutions are running pilots in parallel with their existing production processes to compare against business-as-usual methods.
Despite their shortcomings, most institutions will continue to run rules-based strategies in production based upon regulatory familiarity. However, financial institutions are applying machine learning techniques to optimize or augment existing rules, especially where coverage is suboptimal.

Workflow automation offers potential for immediate cost reductions and efficiency enhancements. Improving risk coverage, identification, detection, and intelligent investigation will be essential for enhancing the effectiveness of AML operations.

Leading institutions are modernizing their systems infrastructure through the adoption of cloud-based computing to become more agile, reduce the cost of services to end users, and comply with data privacy regulations.

The elasticity of computer resources may help midsized institutions test and deploy AI more quickly than through traditionally federated models.

Banks need external help for deploying AI and cloud solutions for accelerating time to benefit and minimize costs and risks. Some prefer working with their existing solution providers, or seeking help from incumbent industry analytics or consulting service providers. Others are working with industry newcomers such as fintech startups.

As banks look to third parties for help, mode of engagement will be an important consideration, because data management, model governance, and skill optimization issues will be crucial.

Some banks can manage third party tools with in-house expertise, some prefer managed service for ongoing support, while others look for the advanced tools to be embedded within current solutions and ready for business users to use.

Third party technology providers must have a solid understanding of AML operations, associated data and infrastructure challenges, as well as regulatory expectations in financial crime compliance.

Was this report useful to you? Please send any comments, questions, or suggestions for upcoming research topics to info@celent.com.
LEVERAGING CELENT’S EXPERTISE

If you found this report valuable, you might consider engaging with Celent for custom analysis and research. Our collective experience and the knowledge we gained while working on this report can help you streamline the creation, refinement, or execution of your strategies.

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Typical projects we support related to risk management and compliance include:

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**SUPPORT FOR VENDORS**
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