



COMPLIANCE REIMAGINED

ARTIFICIAL INTELLIGENCE (AI)
NEW WEAPON IN THE FIGHT AGAINST
TRADE-BASED MONEY LAUNDERING

Trade-Based Money Laundering (TBML) is an area of growing risk exposure for many companies. As criminals have become more experienced and are seeking new ways of money laundering, international trade has emerged as a major channel to transfer illegal and illicit funds. A Congressional Research Service report in June 2016 described TBML as, “among the most challenging and pernicious forms of money laundering to investigate,” and cited U.S. government estimates that billions or even tens of billions of dollars in illicit wealth is laundered through TBML schemes each year¹.

Criminals are using TBML in ways that are more difficult for regulators and financial institutions to detect. Major examples include over/under invoicing or changing the path of shipments. Seeing the growth in such illegal activities and the concern over financing terrorism, regulators are putting more pressure on financial institutions concerning trade financing – creating challenges for financial institutions to identify and investigate trade anomalies.

The complexity of the current TBML investigation process poses several challenges, as described below, and requires a high degree of human intelligence and intervention. However, new processes based on Artificial Intelligence (AI) offer more effective and cost-efficient solutions.

¹. <https://fas.org/sgp/crs/misc/R44541.pdf>

TBML challenges for financial institutions

Major banks in the U.S and around the world are struggling with several challenges related to TBML detection and reporting.

- **The current process is heavily manual.** Investigators must manually collect information and examine a wide range of possible TBML activities, and ensure that they are performing their investigation with all the available information (whether internal or external to the bank). Considering the complexity of trade irregularities, such manual processes can be error-prone, as well as costly and time-consuming.
- **Data resides in various sources and formats.** Currently investigators must access many different systems across various departments (on-boarding, transaction systems, etc.), and conduct searches online or through external databases that include information about shipments, market prices, politically exposed person (PEP) lists, and sanction lists. Data that exists in multiple formats must be consolidated into one dataset for comprehensive analysis and decision-making.
- **Non-commodities benchmark pricing is complicated.** TBML is often disguised via multiple invoices or under/over invoicing. This is a major challenge, especially in terms of non-commodities, where the variety of goods and the descriptions in trade documents can be confusing. That is, it is easy to get a price on a commodity like gasoline, but prices for computers, software packages, consumer products, etc. can be highly variable.
- **Actual shipment paths may differ from documents.** The real cargo path may differ from the route shown on the documents/ship itinerary. The technology to track ships is digital and there are institutions focused on capturing this data. However, this data is not coordinated in a central place that banks can check. Unless this data is integrated into the analysis systems for TBML, investigators will not be able to catch the derailing of ships and possible money laundering schemes.
- **Business relevance is key.** It is important to identify the relevance of the goods being traded to the business. This process should be done not only based on previous business transactions and the goods to the provider's business, but also in the context of the two sides of the trade, their business nature, and the relevance between them. Simply put, is it "normal" for some particular kind of goods to be traded between these types of businesses?
- **It is hard to track the investigation process and provide accurate audit trails.** With so many different systems and departments in a bank, and largely manual processes, it is extremely challenging to track the investigation process and assess how the data is viewed and analyzed. Similarly, providing an audit trail to compliance officers and regulators has become a complex task.

AI Technologies address the challenges

AI-enabled systems provide solutions to the challenges described above, and can enhance our capability to identify possible TBML anomalies. While AI cannot replace every intervention of humans, many of its capabilities (or sub-domains) can be applied to the TBML monitoring process, including knowledge graphs (Semantics), Natural Language Processing (NLP), pattern recognition and machine learning. The value of AI is its ability to support the contextual intelligence required for the detection of possible cases of TBML and the investigation process.

Today, we have two fundamental elements to support AI: data and powerful computational skills. An intelligent TBML process depends on automation of red flag detection and provision of a comprehensive dataset for the investigation process. Below is how various fields of AI can support an intelligent automation of the TBML process:

- **Digitizing trade documents:** The fact that trade documents are largely in paper format hinders the automation of TBML transaction monitoring. However, Optical Character Recognition (OCR) techniques enhanced by enhanced by natural language processing can transform these documents into digitized formats. Bills of lading, invoices, insurance documents, etc. can be digitized, the text can be processed for extraction of relevant/ required data and stored in the system for further processing.





- **Encoding the Knowledge:** Knowledge should be encoded into the system to support intelligent analysis. Such knowledge includes general financial domain information (e.g. terminologies used and their interrelationship), the structure of financial institutions and their lines of businesses, trade regulations and rules (all possible variations of anomalies), as well the investigation process which is carried-out today by subject matter experts. Using knowledge graphs and semantic technologies (subdomains of AI) this knowledge can be encoded into a computer-understandable format for further intelligent and contextual processing.
- **Extracting the right information:** To capture red flags based on encoded rules, the system requires data beyond what can be drawn from trade documents alone. AI technologies, such as knowledge graphs and NLP, can extract and integrate a holistic view of such data, which may range from real-time shipment routes, market prices, PEP and sanction lists, to internal data about customers, such as background and onboarding information, transaction history, and any previous cases. Using NLP to break down and better understand the goods description, while crawling multiple trusted sources and accessing market price databases, allows a faster and more accurate way of building these benchmarks. In addition, a peer profile comparison (based on types of goods being traded), can be performed, which will further enhance benchmarking.

- **Identifying patterns in trade transactions:** The pattern recognition capabilities of AI can analyze patterns of activity in current and past transactions, involving the import/export of currency, deposits of currency, the involved parties and the relationship between them, and the amount and frequency of transactions.
- **Learning from new cases:** As TBML is a complex and dynamic activity, not all scenarios can be initially considered. It is therefore essential to the success of an intelligent TBML detection system to learn and improve by itself. AI can accomplish this through machine learning techniques.

It is of the utmost importance to note that AI-enabled TBML detection cannot replace the work of compliance officers and investigators. AI is merely augmenting and enhancing their performance by automating low-end knowledge gathering, and supporting their decision-making process by providing them with more complete and smarter data. This allows humans to focus on more complex tasks and identifying intricate TBML schemes.

Conclusion

Traditional and manual methods of identifying TBML violations are laborious, costly and error-prone. New AI based systems can augment human intelligence, offering a more rigorous, thorough and cost-efficient solution to the problem of TBML monitoring and reporting.



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Tara is the Chief Ontologist for the NextAngles™ team, leading the company's knowledge modeling and knowledge engineering processes. Tara brings around a decade of experience in semantic knowledge modeling and knowledge-driven applications, having completed semantic-oriented projects in domains including finance, industrial symbiosis, healthcare, electrical products, and manufacturing. Tara holds a PhD in Information System Engineering from the University of Surrey with a focus on the application of semantic technologies in the real industrial world, an MSc in Wireless Enterprise Business Systems from Brunel University, and a BSc in software engineering from Islamic Azad University. Tara is frequently published in academic journals on semantic interoperation and semantic platforms.

ABOUT NEXTANGLES™

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NextAngles™ is an Mphasis venture developing a new breed of disruptive solutions for regulatory compliance and risk management. Our vision is to make compliance easy through a highly automated and knowledge-centric approach that provides a centralised and integrated view of data. The NextAngles™ solution suite can be applied across diverse risk and compliance areas, such as AML Alert Investigations, KYC, Trade-Based Anti-Money Laundering, and Financial Crimes Investigation to create a smart compliance experience. This disruptive approach not just reduces compliance burden, but also increases the speed of response to business and regulatory changes significantly. In addition, it scales to meet the most demanding enterprise-class financial regulatory requirements.

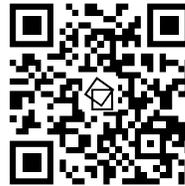
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