Global trade, while being one of the key foundations of the international economy, has traditionally involved cumbersome and time-consuming processes across multiple countries. The vast majority of transactions remain paper-based and therefore involve significant levels of manual processing. The paper-based nature of transactions can also make it difficult to spot patterns in transactions or learn from past experiences.

With more regulatory requirements, which are intended to root out fraud, money laundering, terrorism, human trafficking and other illegal activities, added every year, there is greater potential for transactions to become more complex and time intensive.

Increased use of artificial intelligence (AI), machine learning (ML) and other technologies can help to eliminate time-intensive, manual processes, provide valuable insights and deliver a clearer view of risk activity. Going beyond efficiency, AI can also become a critical tool to better understand the trade business through the application of enhanced analytics.
Investing in technology to bridge the gap

To address these challenges, Citi has worked to develop new trade-related strategies over the past 25 years with a continued investment in new trade technology. As one of the leaders in digitization, Citi was among one of the first banks to digitize documents and extract information using optical character recognition (OCR). Now Citi has made the next technological advancement in processing trade-related documentation by deploying AI and ML to help alleviate the increasing pressures and regulatory expectations of trade compliance.

Citi’s next generational trade monitoring project is developed in collaboration with EY and SAS. The project’s goal is to create an advanced risk analytics engine to help accelerate the processing of global trade transactions while conducting the appropriate regulatory due diligence. This project leverages existing Citi innovations such as the extensive use of imaging, OCR, noun extraction and centralization of information in data repositories worldwide, as well as the huge volumes of transactions processed by the bank. In 2018, Citi processed 9.4 million transactions, for about $1 trillion, giving the bank a massive dataset of 25 million pages – the equivalent of four shipping containers full of transactional information. Within these pages are years of institutional and human knowledge, which are analyzed, classified and defined to provide the parameters of inherent risk that a machine-based model can quickly digest and classify risk levels. As a result, it is expected to significantly increase the speed of transaction processing.

Artificial intelligence can help save time for more sophisticated tasks

The objectives of leveraging AI for trade monitoring are threefold:

• First, by working in real time, the project aims to address a trade’s complex nature and heightened regulatory expectations while not impacting the faster turnaround times that clients expect.

• Second, it will mean that legitimate transactions possibly held up in the past should not suffer the same fate in the future. Unlike a people-based process, learnings by the system can be immediately and consistently applied.

• Third, the solution will potentially allow Citi trade experts to focus time on transactions that have potentially legitimate concerns. Trade experts also expect to have more time for sophisticated tasks such as refining the uses of AI and ML for trade processing.

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Tailoring technology to address different risks

Next generational trade monitoring is a significant advancement as it may more efficiently detect transactions with potential compliance concerns upfront. By managing and comparing a large number of data points across current and previous transactions, the potential for this project also brings expanding the use of digitization, automation and advanced analytics. To do this effectively, the project deploys different technologies in different ways (reflecting Citi’s risk appetite) across five key compliance areas:

- AML/Fraud
- Export controls
- Boycott
- Sanctions
- Military/dual-use goods

Some trade monitoring modules work in a relatively straightforward way. For example, Boycott detection uses text analytics, data mining and natural language processing (NLP) to look for specific prohibited language contained in the documentation.

Others are more complex. For instance, sanctions screening also uses text analytics to assess lists. However, list based screening historically creates large volumes of false positives that trade experts must wade through prior to processing a transaction. To address this, there is rules-based scenario logic designed to help contextualize and enrich information generated by the screening system. For example, a person can be differentiated from a vessel or location. The system also looks at historical behavior so that details which may have previously raised concerns (before being determined to be false) are not returned for attention in the future. The export controls module operates in a similar list-based way to sanctions using noun phrase extraction and data enrichment.

For AML/Fraud, over 240 characteristics across multiple systems can be analyzed so that connections that would be impossible for humans to spot are revealed. As Citi already does extensive due diligence on its clients, many of the risks in transactions can actually originate from non-clients. To address this, the AML/Fraud module looks at these non-clients in real time to detect anomalies. The AI and ML deployed uses supervised learning by trade experts to help ensure the right lessons are learned and increase the amount of transparency into how the outputs are derived. AI’s ability to help systems “learn” over time means that when a new transaction occurs with similar characteristics to a permissible past transaction, it will utilize previous history to reduce the creation of false positives.

The assessment of whether a transaction involves military/dual-use goods is perhaps the most challenging of the areas on which Citi plans to focus and is still under development. It is difficult as there are no clear list of items to screen for and necessary assessment can be subjective.
Paving the way for future advances with data

Citi will continue to build on the trade compliance improvements achieved by next generational trade monitoring. The transparency delivered by NLP and other technologies can offer additional potential benefits and deeper insights. Moreover, the environment into which the project launched is rapidly changing. Over the past year, many regulators expressed their support for financial institutions to expand their use of more advanced solutions and technologies to detect and report on potential financial crime.

Future advances could remain challenging given the disparate stakeholders that are part of the global trade ecosystem and the complexity of trade documentation. Nevertheless, future ambitions include automating document examination associated with letters of credit and other trade areas. Citi also intends to use predictive analytics to enable the system to better anticipate trade activity and provide insights based on broader global trade trends.

Similarly, while Citi’s data set and the technologies underlying next generational trade monitoring are currently being deployed to address back-office issues and help reduce operational risks, they also open up exciting possibilities to support enhances to client experiences. The ultimate goal of automating the processing of information can help accelerate the digitization of trade and can enable corporates to make faster and better-informed decisions.