

Artificial Intelligence to Improve Trade Processing in Capital Markets

The World Bank Treasury has developed and implemented an innovative AI-powered tool named SHASTRA (Shaping Capital Markets by Enabling a Single Source of Truth for All). This tool uses generative AI to extract key trade terms directly from dealer term sheets for funding and asset-liability management (ALM) transactions.

Once the data is extracted, traders validate and submit the data to the World Bank Treasury's core transaction system. This streamlined process can significantly reduce manual entry errors and fragmentation, creating a single, trusted source of validated trade data. Over time, this "golden copy" of data can be shared with downstream capital markets participants, improving data consistency and operational efficiency across the entire trade lifecycle.

Background

Each year, the World Bank Treasury teams raise \$60–80 billion through International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA) bond issuances to support development programs worldwide.

Currently, managing the lifecycle of these transactions is largely a manual process – requiring multiple entries, reviews, and reconciliations within the World Bank and by stakeholders such as dealers, custodians, agents, and clearing systems.

This fragmented approach increases the risk of errors and inefficiencies and takes a significant amount of time and resources. These workflows are unsustainable in today's fast-paced capital markets environment.



Photo: Adobe Stock by Rindi - Generated with AI

Project Objectives

SHASTRA was developed to address the following key objectives:

- **Digitize trade data** to improve efficiency and reduce operational risks for all market participants, including issuers, dealers, custodians, agents, and investors.
- **Create a single, digitized copy** of trade data as a "golden copy" for all stakeholders mentioned above.
- **Automate the booking of trades** in the World Bank Treasury's core systems by using this data.

Solution

SHASTRA (Shaping Capital Markets by Enabling a Single Source of Truth for All) SHASTRA transforms trade processing by leveraging artificial intelligence to automatically extract trade details from term sheets. These details are verified and directly uploaded to the World Bank's core treasury system, creating a version of the trade record.

This approach replaces the traditional manual process, with the potential to significantly improve accuracy and speed. SHASTRA can help ensure that all market participants—issuers, custodians, dealers, and investors—work from the same, verified data set.

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SHASTRA complements the collective expertise of several stakeholder teams within the World Bank and aligns with the World Bank Treasury's role and franchise as a leading issuer and innovator in the global capital markets.

Benefits

Reliable and Consistent Trade Data. By extracting trade terms directly from the source documents, SHASTRA helps ensure that the trade data captured is accurate and aligned across all systems.

Strengthened Trade Controls. The AI-generated data is reviewed by humans before being uploaded. This added layer of verification strengthens internal controls and improves the efficiency of the trade validation process.

Improved Data Sharing. Over time, market participants, including fiscal agents, clearing houses, custodians, and investors, can access trade data from a single source. This can help reduce discrepancies caused by having different versions of trade information across multiple systems.

The Way Forward

In the near term, SHASTRA aims to establish itself as a trusted internal platform for extracting and validating

trade data, reducing inefficiencies in transaction processing and review.

Over the next one to three years, the focus will be on expanding data sharing capabilities with external partners—such as fiscal and paying agents, custodians, and investors—ensuring consistency and real-time reconciliation. Interfaces are already being tested to enable automatic data reconciliation between the World Bank Treasury for IBRD and IDA and their fiscal agents.

Looking ahead, the World Bank plans to continue to share its experience with SHASTRA with other market participants, so that it can be helpful as a scalable solution to improve efficiencies in the broader capital markets ecosystem.

Innovation Summary

Technology	Generative Artificial Intelligence
Platform	Microsoft Azure OpenAI, Murex
Function	Intelligent extraction and automated trade booking
Application	World Bank bond issuances and asset-liability management transactions
Standardization	Creation of a single, authoritative golden copy of trade data
Outcome	Enhanced data dissemination, operational efficiency, improved trade control

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