CASE STUDY

Citi mitigates risk, aces liquidity stress test using SymphonyAI Sensa

An increasingly complex world demands a different modeling solution – prioritizing scope, collaboration, speed, accuracy, impartiality and transparency

Citi is one of the world's largest and most complex financial institutions, operating in 98 countries, facilitating more than $4 trillion in flows each day. They hold over $950 billion in deposits and have over $620 billion in loans across their institutional and consumer businesses.

The 2008-09 financial collapse led to a Federal Reserve Directive that banks with consolidated assets over $50 billion have additional risk assessment frameworks and budgetary oversight in place. To assess a bank's financial foundation, the Federal Reserve oversees several scenarios (company-run stress tests) referred to as the Comprehensive Capital Analysis and Review (CCAR) process. These tests are meant to measure the sources and use of capital under baseline and stressed economic and financial conditions to ensure capital adequacy in all market environments.

Highlights

Challenge

- Create accurate, defensible models proving to the Federal Reserve that Citi could forecast revenues and capital reserve required to absorb losses under stressed economic conditions.

Solution

- SymphonyAI Sensa machine intelligence for financial services.

Benefits

- Accurate, transparent, defensible revenue forecast models prepared Citi to clear regulatory hurdles.
- Drastically reduced resources from hundreds to less than one hundred.
- Compressed the process from nine months to three months.

Key attributes

Key attributes of this modeling solution include:

- Automated feature selection to create bias-free, highly defensible models.
- A consistent and predictable workflow to rapidly produce accurate, transparent models.
- Designed for active collaboration and explainability with technical and non-technical counterparts alike.
- Automatically generates documentation for internal validation and regulatory compliance.
- Rapidly isolates an entire suite of defensible, high-quality candidate and challenger models.

Challenge

Citi consistently struggled to pass its annual stress test, failing two of the first three. The bank needed a way to rapidly create accurate, defensible models that would prove to the Federal Reserve that they could adequately forecast revenues and the capital reserve required to absorb losses under stressed economic conditions. The bank's modeling approach left the business unit leads with little room and time to weigh in on the logic behind the selected variables. The result was the firm could not confidently defend the models that they included in the filings they presented to the Federal Reserve.

Solution

Citi selected SymphonyAI Sensa to supplement its capital planning process. The process began with the leaders of the bank's business units reviewing the macroeconomic variables stipulated by the Federal Reserve.

SymphonyAI Sensa enriched these variables using several techniques (e.g., time series transforms such as lags, differences, and percent changes) and created over two thousand variables. SymphonyAI Sensa applied its machine intelligence software to rapidly correlate and analyze the impact of these variables on each business unit's monthly revenue performance over six years, uncovering statistically significant variables highly correlated with each business unit's performance.

A comprehensive business review was conducted to screen the identified variables before inclusion in the models for each business unit. SymphonyAI Sensa then conducted exhaustive statistical tests (including stationarity and multicollinearity tests) to validate these models' ability to predict revenues for the business units.

The business leads then evaluated the candidate and challenger models, selecting those that best represented their business units. With a collection of accurate, transparent and defensible revenue forecast models, the bank could quickly clear its most challenging regulatory hurdle.

Results

The process compressed the resources required from a nine-month process requiring hundreds of employees to a three-month sprint with fewer than one hundred.