

Is AI's Flagship Use Case Is A Bank's Treasury?

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The Status Quo

We foresee "AI Pioneer Banks" as those who established their AI Programs back in 2017, launched their pilot models in early 2020s and now matured their AI models into daily proven tools for customer service (e.g. chatbots, liveliness recognition, biometrics), employee productivity (e.g. complex document processing, transaction screening) and decision making (e.g. credit, market, operation, liquidity risk management).

The Banking and Technology press is rife with case studies on virtual assistants made possible by banking-trained large language models (LLMs) and neural networks detecting fraud and money laundry patterns. Naturally, this tempted many banks to re-enforce their AI investments in the areas of Chatbots and Fraud Detection.

Yet, we profess that the flagship AI use case with the quickest and highest potential is a Bank's Treasury Function. Specifically, the use of AI to improve the accuracy of various forecasting models of- deposit decay, re-pricing behaviors, short-to-medium term cash flow volatility and capital management.

Why Treasury?

Let's ponder 3 reasons of- Business Value, Readiness and Organisational Impact.

First, Business-Value-wise. A precursory analysis of the Top-3 Banks in some progressive economies reveals the following average metrics-

Region	Average Efficiency Ratio	Average Return On Asset (RoA) Ratio	Average Loans Portfolio Size In USD Billion	Average Operating Expenses In USD Billion
US	61.35%	0.92%	1,044	70.9
UK	57.9%	0.58%	643	22.45
Singapore	41.4%	1.24%	267	5.2
China	31.3%	0.74%	3,500	32
Australia	47.8%	0.7%	499	7.7

The table demonstrates the high disparity in RoAs which can be partly attributed to inefficient or ineffective asset liability management (ALM) practices. Noticeably, a fractional improvement in RoA ratio of 0.01% will lead to a whopping annual return of USD 26 – 104 M depending on the asset size.

Second, Operational Readiness. AI is hungry for data, specially the structured and trusted type. Treasury Functions which are deeply rooted in "Asset Liability Management – ALM" statistical frameworks (e.g. Decay Functions, ARIMA, Monte Carlo Simulation) fit the bill, as such functions draw much of its data from capital market, core banking and enterprise resource planning systems to analyze the dynamics of various assets, liabilities, cash inflows and cash outflows.

Third, Organizational Impact. A Treasury Function's impact on a bank's performance is far reaching as it controls the prices for loans and deposits, orchestrates the funding of

cashflow gaps and influences a bank's allocation of capital and funds across various lines of business and product categories.

The How

The academic and industry research has proven that using Neural Networks (Machine Learning) techniques in certain "Asset Liability Management – ALM" components trumps the traditional statistical methods speed- and accuracy-wise. Let's ponder the following use cases.

Case #1 – Underwriting Documents Processing

AI Large Language (LLM) Models can scan loan agreements to quickly classify corporate credit facilities and extract the necessary vital information in terms of- pricing options, re-structuring options and maturity-driven provisions.

Rocket Mortgage developed an LLM-powered platform called Rocket Logic using Anthropic's LLMs at its core with access to contextual insights from 10+ petabytes of Rocket Mortgage's proprietary data. The solution automatically processes 70% of borrower documents and handles 90% of data extractions, saving the company's underwriters 9,000+ hours of manual work monthly (Source: arXiv).

Case #2 – Deposit Sales Growth

AI models are used to switch residual liquidity in current and savings accounts into varying term deposits using a hybrid model of- active sales offers, pre-approved client agreements and hybrid products.

Royal Bank of Canada's NOMI Find & Save tool, built on AI, identifies customers with surplus money in checking accounts and helps set up deposit accounts automatically, with users moving about \$495 a month into savings products on average (Source: GitHub).

Case #3 – Deposit Decay

AI Models are used to better predict the behavior of non-maturity deposits with the ultimate objective of optimizing both Net Interest Margin and Funding.

In a Portuguese Bank, Ensemble machine learning model with feature selection achieved 98.6% accuracy in classifying customers for term deposit subscription and outperformed recent competing models by a considerable margin of 3% on a widely used dataset (Source: IEEE Xplore).

Case #4 – Loan Re-payment Simulation

AI Models are used to better predict the loan re-payment behavior due to various events such as- fed rate reduction, forced contractual sale or interest expense optimization.

MSCI deployed an AI model to produce better forecasts than traditional modeling techniques, with average absolute error across ranking buckets of 0.1 single monthly mortality (SMM) for the AI model compared to 0.3 SMM for the human model (Source: ScienceDirect).

Case #5 – Credit Facilities Drawdown Simulations

AI Models are used to better predict customers withdrawals of available overdrafts and credit facilities, thus generating reliable “Credit Conversion Factors – CCF” to estimate the Exposure At Default (EAD).

An Inuit/Mint study on 9 US Banks data proves that the use of “Gradient Based Decision Trees” results in 4x – 15x lift in accuracy of predicting customers’ use of overdrafts within a 1-week time frame.

Case #6 – Shocks To Liquidity

AI Models are used to better predict a market's liquidity, and hence, the cost of short-term funding in a stressed economic situation.

Bank Of Greece simulated the impact of stressed economic conditions on banks' capital adequacy ratios (CAR) and profitability. The use of deep neural network results in reducing the mean average percentage error (MAPE) by 20-25% compared to classical models.

Thanks!

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