

Reinventing financial spreading with AI



Abstract

In the banking and financial services industry, the review and analysis of financial statements form the foundation of several strategic business decisions. Spreading of financial statements is the process of presenting financial information in a format conducive to analyses and identification of risks to inform decision making. This paper delves into how the process of spreading financial statements can be automated using a combination of different artificial intelligence (AI) technologies such as digital image processing, natural language processing (NLP), and machine and deep learning algorithms. It also presents an AI-powered automation framework depicting the end-to-end automation flow.

Why financial spreading automation

In banks, the objective of financial spreading is to present financial information at a higher degree of granularity to aid strategic business functions like investment advisory, rating analysis, credit appraisals and decisioning and so on. This process subsumes multiple counterparties (listed and unlisted entities) across many countries and languages. Financial spreading in banks is either a predominantly manual exercise or at best a semi-manual operation. Manual operations are resource-intensive and add to costs besides being error-prone which means that the analyses and inferences may not be a completely reliable basis for downstream business decisioning.

Drawbacks of manual spreading

Banks with counterparties spread across geographies have to analyse financial statements that are in different languages, which means they have to hire resources with the necessary linguistic skills. Manual spreading of such multi-lingual statements results in teams interpreting and inferring financial statements for spreading differently. This affects the accuracy and reliability of the spread numbers.

Moreover, financial organizations prefer to centralize the financial spreading function on a shared services model to facilitate automation, reduce manual intervention, and realize cost and efficiency benefits. Manual spreading imposes limits on the degree of centralization that can be achieved and could potentially require additional investments.

Leveraging the AI opportunity

Diverse technology stacks coupled with non-standardized and multi-lingual financial statements in banks mean that the tenets of conventional automation may not work paving the way for an AI-based framework. By leveraging AI in spreading of financial statements, banks can limit human intervention to error management, exception handling, adjustments of numbers (as appropriate), and sampling-based validation of the spread numbers extracted from financial statements. It enables financial organizations to achieve a high degree of spread accuracy, especially for repetitive activities. Banks must also consider embracing centralized and/or shared service models for financial spreading to help reduce unnecessary overheads of compiling financial statements from multiple sources. This will help minimize impact of changing team sizes, manage evolving regulatory requirements, and enable cross-platform research and analytics.

AI in action

The proposed AI-powered automation framework must leverage robotic process automation (RPA), optical character recognition (OCR), natural language processing (NLP), and machine learning (ML) algorithms to automate a variety of processes across functions. These functions could typically span data extraction, identification and classification of financial data, queue-based exception handling, tracking and monitoring, and reporting and control. The framework must be embedded with ML algorithms to enable the system to learn on the job as well as enable custom reporting capability.

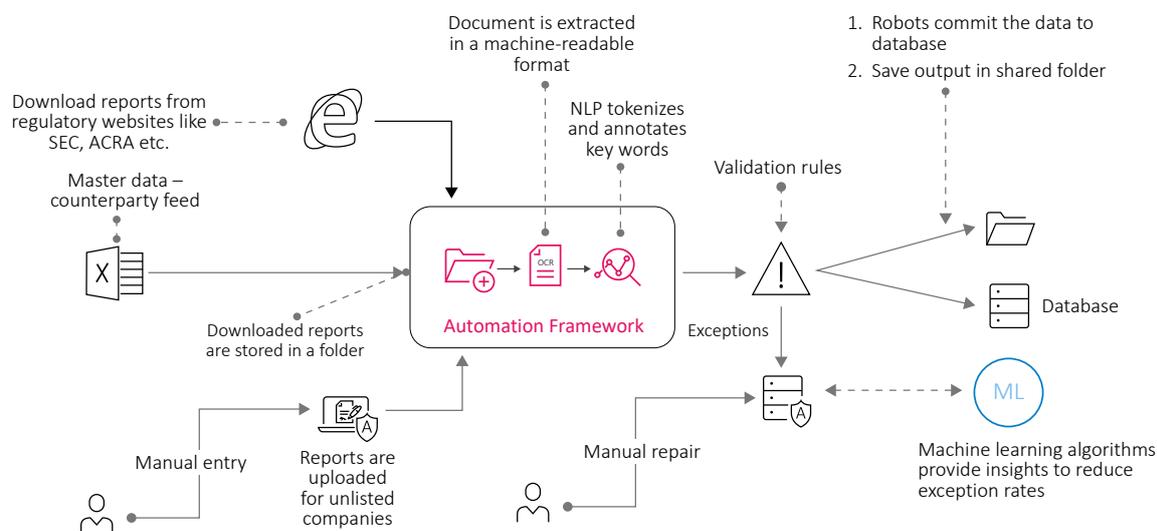


Figure 1: High Level Architectural View of an AI-powered Financial Spreading Automation Framework

Figure 1 shows a high-level architectural view of the proposed automation framework and depicts the end-to-end flow commencing from sourcing of financial statements. The solution extracts financial statements from the websites of respective counterparties or regulatory bodies and places them in the designated shared folder path. Subsequently, the spread elements are extracted and validated before being mapped in the required format to a designated folder path or the specified destination system. In addition, the framework allows for exception handling and mandated interventions to eliminate errors.

Benefits of an AI-powered automation framework

Banks can realize a slew of benefits by adopting an intelligent framework for financial spreading automation.

Better credit decisioning and investment advisory

Reduced manual operations drive more accurate analysis, which helps mitigate credit risk and improve the quality of credit decisions. Accurate analysis empowers investment advisory teams to offer advice that aligns with their clients' investment goals. The framework also helps save costs by reducing resource utilization. In addition, an AI-powered framework can help bring in a higher degree of customer centricity to the investment advisory function, and consequently improve customer experience, which has the potential to unlock exponential value for investment banks.

Agility

A custom built and flexible solution that integrates application programming interfaces (APIs) and flexible tooling components helps render the high degree of agility required to respond and adapt to unforeseen challenges, enable accurate, on-time financial spreading outcomes, and drive better decisioning across investments, portfolio advisory, credit, and so on. The inherent flexibility of the custom-built framework affords banks the freedom to cherry pick technology tools and APIs such that costs, effort, and the benefits are harmoniously balanced.

Case in point

A large European bank, with a global network of branches across 18 countries and operations across commercial banking, corporate and investment banking as well as wealth management planned to embrace a self-service financial spreading automation platform. The scope of the ongoing engagement covers the following:

- Deploying APIs with OCR capability to extract and render text from documents in a machine-readable format.
- Adopting NLP capabilities to handle reports in multiple languages including keywords interpretation.
- Embedding data dictionary and ontology for mapping the extracted entities.
- Deploying ML algorithms to train the framework to self-learn and enhance the degree of automation over time.
- Creating a user interface for manual upload of non-listed entities, exception management, and remediation.

With a self-service financial automation platform, the bank realized several benefits. The bank was able to support multiple file and document formats, enhance operational efficiency in conduct of spreads (20-30% time reduction to perform spreading and productivity gains of up to 30%), and save costs. Financial spreading accuracy also went up—by up to 70% for standard documents and 40% for non-standard documents.

In addition, the platform enabled a single source of truth for spread values thus eliminating effort in consolidation and reconciliation from multiple source feeds. The platform enables end-to-end auditability, and facilitates comparison of previous spread iterations by business teams. Lastly, the platform delivered configured spread aligning with the bank's credit guidelines and legacy source systems while enabling standardized spread templates, processes, and rules.

Looking beyond tomorrow

The business case for financial spreading automation is clear but there is no one-size fits-all approach. Individual banks must evaluate their own landscape to determine what suits them best. However, banks must refrain from implementing tactical solutions to address specific pain points for short term gain. The way forward lies in performing multiple, small PoCs to ascertain the feasibility of using an AI-powered financial spreading automation framework. Organizations must document and institutionalize the lessons learned from the PoCs, which can then form the basis for a strategic enterprise-wide implementation.

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