



BANKING AND CAPITAL MARKETS

Implementing AI in the Banking Sector

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Introduction

Artificial Intelligence (AI) is a fast-growing technology that has undoubtedly influenced the daily life of millions of people around the world. At the same time, national, international and supranational authorities cannot overlook its effect in our lives, be it the navigation apps that use AI to analyze traffic patterns or AI-powered virtual assistants. In simple terms, AI is the ability of a machine to display human-like capabilities such as reasoning, learning, planning and creativity. The European Union (EU) considers AI as an essential tool to the digital transformation of society and has elevated it to a priority with Community dimension.

In that context, EU introduced a proposal for a *“Regulation of the European Parliament and of the Council Laying Down Harmonized Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts”* (the **“AI Act”**), the world’s first attempt towards a comprehensive AI regulation, aiming to reap the benefits of growing new technologies and at the same time defining and addressing the associated risks. The question is no longer whether to use AI, but rather how to use it in the most responsible and effective manner.

Implementations of AI in the banking sector

AI presents significant opportunities, having the ability of swiftly and precisely analyzing extensive volumes of data, enhancing risk detection through the identification of patterns within the data, aiding decision-making, and automating repetitive tasks – all of which can elevate functions necessary to the banking sector.

AI tools are being used for the analysis and classification of data, which is essential to support informed decision-making by financial institutions and consumers of financial products and services. These allow the automation of the classification process, which is quite time-consuming and permits human resources to allocate time and energy in assessing and interpreting the data instead.

The ECB, being the European supervisory authority for credit institutions, uses Machine Learning (a specific type of AI technology used for data processing) to disseminate data from over ten million legal entities in Europe, which are then classified by institutional sector, in order to support its decision-making. Another use of AI tools in the area of banking supervision is the production of network diagrams to depict connections within the data, allowing users to visualize the typically intricate ownership structures of the regulated banks.

Furthermore, AI tools are being used in the context of banking supervision to broaden comprehension of price-setting behaviors and inflation dynamics. In fact, the ECB uses AI web scrapping techniques, to gather real-time data on individual product prices and in that way, it can obtain a comprehensive overview and monitoring of inflation throughout the EU.

Additionally, the ECB has developed an AI-based platform named *“Athena”*, which assists supervisors with topic categorization, consolidation of information, by using natural language processing models trained with supervisory feedback. Such tool eliminates the

risk of human mistake and permits supervisors to be even more precise and analytical against infringements by supervised entities.

Large-language models (like ChatGPT) are also being used by banks to prepare summaries and draft concise briefs, aiding banking staff in policy formulation and decision-making endeavors. Such models contribute to elevating the quality of texts authored by banking staff, thereby facilitating communication with the public. Finally, AI translation technologies are also beneficial to banks for interaction with customers. The ECB employs AI translation tools to communicate with European citizens in their mother tongue.

Associated risks

Considering the wide range of benefits and opportunities of AI technology, the financial sector is increasingly embracing it to optimize necessary functions, however, banks must simultaneously deliver on risk management responsibilities. AI risks include data privacy concerns, legal limitations as well as ethical issues, such as transparency and accountability. It is worth noting that the European data strategy, encompassing laws like the Data Act and the Data Governance Act, is also pivotal in influencing how AI is utilized within the European financial sector.

AI Act itself applies a tiered approach depending on how risky AI tools are. In that context, “*risk*” is defined as “*the combination of the probability of an occurrence of harm and the severity of that harm*”. On that basis, we have unacceptable AI practices (which are banned in the EU), high-risk AI systems and lower risk AI systems. AI-based creditworthiness assessments by banks, as well as pricing and risk assessments in life and health insurance are considered high-risk AI use cases and will therefore have to comply with heightened requirements for such AI applications. Subsequently, national competent authorities shall ensure that financial institutions

comply with the new AI risk management framework.

Additionally, although AI can be particularly useful in risk management which involves large volumes of data and relatively simple repeated actions, economists remain cautious with regards to AI usage for macroeconomic projections. Banks are still reluctant to hand over substantive control to highly powerful algorithms and systems. The main reason behind it is that crisis events are rare and have unique characteristics, making it very hard for AI to train on past crises and entailing a risk of unreliable predictions.

Other risks revolve around algorithm convergence in central bank practices. If various central banks develop models based on similar assumptions about the economy, it could result in their reserve management strategies becoming more alike in terms of asset allocation decisions. As a consequence, there may be reduced short-term volatility in financial markets as central bank reserves would tend to move in sync.

Finally, another well-documented risk of AI technology for banks revolves around data biases, due to the underrepresentation of remote regions and lower-income households in population data sets. Such risk should be eliminated by developing the necessary methods and tools in order for AI usage to produce safe and reliable results, but this requires further development and evolution of AI systems.

Final remarks

Overall, AI technology presents significant opportunities for the financial sector allowing for the optimization of some pivotal functions and the automation of others. Yet, it is crucial that financial institutions proceed with necessary caution and continue to address the associated risks in a manner that secures compliance with their supervisory requirements and the continuing stability of the financial system.

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