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AI in Financial Services: embracing the new reality

Introduction

For more than a decade, the use of innovative technologies has been dramatically reshaping the financial services sector that we know. Use of online banking apps, chat-bots and innovative payment solutions has become a new normal for consumers around the globe and some more advanced technological breakthroughs like crypto-assets are becoming ever less strange area for a great number of people as well. In the back-ground, financial institutions have been leveraging the use of new technologies for the more efficient provision of financial services, from cloud computing, algorithmic and high frequency trading systems all the way to the distributed ledger technology (DLT).

Aiming to achieve better cost and time efficiency as well as better customer experience and investment outcome, financial institutions are competing with each other in a continuous race all looking to get the answer to the same question: what is going to be "the next big thing"?

End of last year, the wider public was for the first time able to see the capabilities of generative artificial intelligence (AI) based systems following the release of the chat-bot called "ChatGPT". This sent the shockwaves throughout the world as well as the clear signal to big enterprises, including the financial institutions, that investment in AI shall be put (back) on the top of their agenda in the years to come.

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What's the catch with AI?

It is no secret anymore that businesses and governments around the world are increasingly focusing on AI by seeing it as a way to unique competitive advantages that the use of this technology may bring. According to the PwC Report[1] it is expected that AI could contribute up to $15.7 trillion to the global economy in 2030 by increasing productivity across various sectors.

Nonetheless, in order for us to understand why financial institutions may be interested in adopting this technology, we shall start from the basics - What is AI and what are some of its subsets that we may frequently come across in the media?

1 Artificial Intelligence

In a nutshell, AI refers to an overarching discipline of computer science that aims to enable computer systems to mimic human behavior by being able to make decisions and perform tasks commonly associated with human cognitive functions (e.g. playing a game, interpreting a speech, summarize a text).

2 Machine Learning

The most well-known subset of AI is machine learning which focuses on the use of data and algorithms to imitate the way that humans learn from past experiences based on the ability to find hidden insights in data without being explicitly programmed where to look or what to conclude.[2] We are interacting with machine learning systems in our everyday

[1] PwC Report "Sizing the prize What's the real value of AI for your business and how can you capitalise?" pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf

[2] ibm.com/topics/machine-learning

life already: from streaming platforms that look to recommend us our next tv show or a movie to social media platforms that are looking to feed us constantly with a content we are most likely to be interested in.

3 Deep Learning

Deep learning is a subset of machine learning, which essentially operates based on an artificial neural network that aims to simulate the behavior of the human brain by being able to learn from large amounts of data with almost no need for human intervention.[3]

4 Natural Language Processing

Natural language processing (NLP) refers to the branch of AI that gives AI systems the ability to understand text and spoken words in much the same way humans are able to by combining statistical, machine learning and deep learning models.[4] AI systems utilizing NLP are able to extract information from documents and reproduce them in accordance with the given task such as to translate documents, summarize large texts and/or create text from the voice data. Leading example of an NLP based AI system is the recently released ChatGPT.

[3] ibm.com/topics/deep-learning

[4] ibm.com/topics/natural-language-processing

Use of AI in the Financial Services Sector

The rising interest of financial institutions in AI is driven by the fact that there is a number of different areas of the financial services sector where the use of AI can be successfully leveraged for the purpose of more efficient provision of financial services.

1 Robo-advisors

In recent years, the financial services industry has experienced rapid emergence of a new type of tools that financial institutions have started using for the provision of financial services, the so called "robo-advisors". With the aim of achieving better cost efficiency and client experience, the financial institutions have been increasingly experimenting with the use of these AI and/or machine learning based computer algorithms, that were particularly used in the area of discretionary portfolio management and investment advisory. By having access to large pools of market data, information about all investment products in the firm's portfolio as well as information about the individual circumstances of a particular client (e.g. financial situation, risk tolerance and past investment behavior) robo-advisors were seen by many institutions as a better alternative to human workforce that can provide an investment advice or recommend an investment strategy that is better aligned with the individual investor's investment profile.

2 Securities Trading

Another area that can be seen by financial institutions as a particular fertile breeding ground for deployment of AI based systems is securities trading. Deployment of AI component can boost capabilities of the existing trading systems used for automated creation and execution of trading orders such as algorithmic and high-frequency trading systems that have been in use in the financial services sector for quite some time now. Further, by being

able to analyze large volumes of market data at pace and scale unimaginable for the human workforce, AI can bring more efficiency to investment research departments and perform more accurate analysis of potential target investments potentially leading to better investment outcome.

3 Collective Portfolio Management

In the collective portfolio management (commonly known as asset management) space, the use of AI can improve the ways in which fundamental analysis of market data and evaluation of potential target investments is being performed as well as to enable better optimization of portfolio constructions themselves.

Managing portfolios in line with the firm's ESG strategy that many collective portfolio managers were adopting in recent years (whether on a voluntary or mandatory basis) can also become easier with AI that can analyze data from product information material, information about the issuer and from the industry, as well as ESG ratings to assess and categorize financial products in accordance with their ESG profile more efficiently and more accurately.

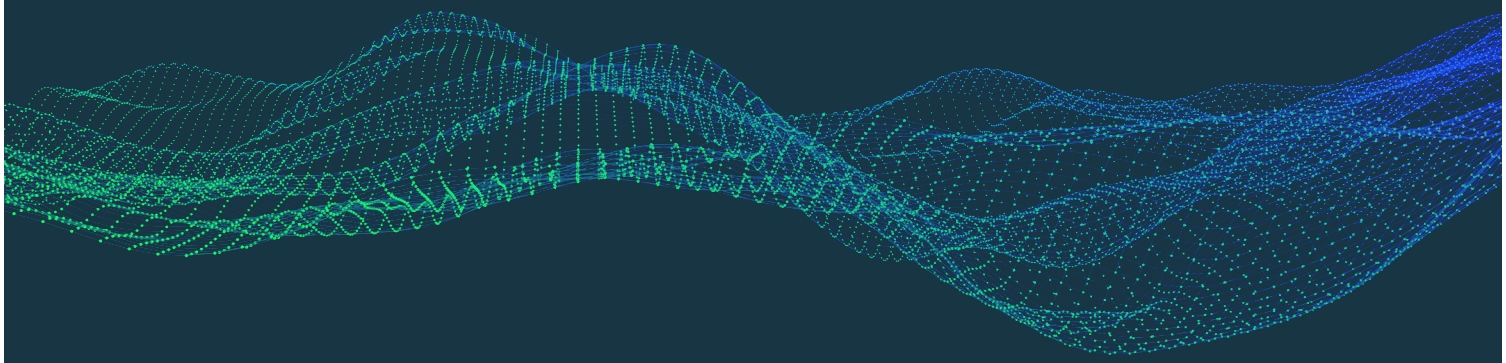
4 Compliance & Risk Management

Last but not least, the use of AI can potentially bring numerous benefits to financial institutions in the compliance and risk management departments as well. AI based systems generally can track the risk exposure of the firm in a more efficient way across various asset classes at the same time, and make adjustment or eventually initiate exit from the position to align firm's risk exposure with regulatory requirements in a fully automated way.

On the compliance front, the financial institutions can leverage AI to achieve better oversight and control of trading behavior of the trading floor staff as well as more efficient detection and reporting of compliance related incidents (such as fraud detection or market manipulation). Further, by utilizing AI techniques such as facial recognition, biometric identification and big data analytics, financial institutions can boost capabilities of their existing tools used for AML/CTF compliance purposes: from KYC systems used for customer onboarding to AML and sanctions monitoring and screening tools, that are used to ensure firm's continuous compliance with applicable regulatory requirements.

Against the backdrop of everything mentioned above, it is no wonder that the interest of the financial industry in AI is experiencing an exponential growth in recent years, and it does not show any signs of slowing down anytime soon. And while there are many potential benefits that the use of AI may bring to the financial services industry, it's not all "sunshine and rainbows" since on the flip side, the use of AI can potentially create certain problems as well. First, the use of AI systems may potentially intensify financial and non-financial risks, and give rise to potential consumer and investor protection considerations (e.g. as risks of biased, unfair or discriminatory consumer results, or data management and usage concerns).[5] Further, given that larger financial institutions are generally in a better position to introduce AI systems first, this can potentially create uneven playing field and create high barriers to entry for smaller institutions from a competition law perspective. Last but not least, the questions around liability for harm that AI systems may cause to investors and/or publicly listed entities remain to be answered by lawmakers and courts that are adapting to this rapidly changing digital environment that we all are living in.

That being said, clear legal and regulatory rules that apply to entities using AI systems may be seen as an essential precondition for their introduction in the first place – however, when it comes to this point, the picture still appears to be much blurrier than one might think.



[5] oecd.org/finance/financial-markets/Artificial-intelligence-machine-learning-big-data-in-finance.pdf

Compliance with the existing Financial Services Regulation

As the industry was embracing and leveraging AI based systems, regulators around the globe have started paying closer attention to this topic as well. The Financial Stability Board, the Bank for International Settlements as well as the European Central Bank have been dealing with the use of AI in the financial services sector extensively in recent years. Financial supervisory authorities in the EU, including German BaFin, French AMF and the Dutch National Bank, have been publishing some high-level guidance for the industry largely by emphasizing that when using AI, financial institutions need to take risk-based approach and ensure compliance with the existing applicable regulatory requirements.

The existing financial regulation in the EU is written in a rather technology-neutral way so that it can apply to a specific type of a regulated activity regardless of how the activity is being performed, in an automated or non-automated way (by taking the "substance over form" approach).

When it comes to investment firms providing investment advice and discretionary portfolio management services, they are required to ensure compliance with the suitability requirements under MiFID II by ensuring that a recommendation they provide is suitable for client's individual circumstances (such as financial situation, risk loss capacity, investment horizon etc.).

Back in 2018, the European Securities and Markets Authority ESMA, has published some high-level guidance for firms that use automated systems for provision of investment advisory and discretionary portfolio management services. In its **Guidelines**, ESMA has emphasized that even in cases where firms use automated systems for the purpose of provision of financial services, their management bears the ultimate responsibility for the outcome, same as when they use human workforce for this purpose. Further, ESMA requires firms that use automated systems to emphasize to their clients that the service is provided through an automated system (e.g. robo-advisor), explain the exact degree and extent of

human involvement and support in the process as well as to use interactive text sections (such as pop-up boxes, FAQ sections or tooltips) to emphasize important information.

In the area of securities trading, the financial institutions that seek to use AI based systems need to take a number of various existing regulatory requirements into consideration. Ensuring compliance with specific requirements under the MiFID II framework on algorithmic trading, as well as compliance with overarching requirements on prevention of market abuse under Market Abuse Regulation are some of many compliance areas that the financial institutions envisaging to use AI based systems in securities trading shall have on their to do list.

Where the firm source AI based solutions from third party providers (such as technology companies), specific requirements on outsourcing arrangements and risk management in relation to third party providers are another area that is of particular importance for ongoing compliance with existing financial regulations in the EU.

Besides the above mentioned, another important area that is of special importance for regulated financial institutions using AI based systems, is compliance with specific requirements on IT and management of information communication technology (ICT) risks. Whereas the existing requirements ICT risk management are heavily fragmented across the EU sector specific legislation and national laws, the new harmonized regulatory framework on digital operational resilience anchored in the new **Digital Operational Resilience Act (DORA)** will put financial institutions operating in the EU in front of new compliance challenges. For the firms using AI systems, this will be a major area to watch in the coming period.

Future EU regulatory framework on AI

While the compliance with the existing financial regulations remains for the time being the major task for financial institutions, there is a new EU regulatory framework on the horizon that will have a significant impact on the firms using AI based systems for the provision of financial services.

Namely, as part of its AI package announced in April 2021, the EU Commission has presented a proposal for a new Regulation (the AI Act) that will introduce a comprehensive horizontal regulatory framework on AI in the EU. The AI Act will introduce a number of different obligations on providers, importers, distributors and users of AI systems and will apply to all sectors, public and private, including financial services.

1 Scope

The new regulatory framework will be of particular importance for financial institutions where they act either as a:

- Provider of AI systems, where they develop AI system with the aim of making it available on the market, or putting it into service under their own name or trademark, or
- User of AI system, where they use AI based systems whether their own proprietary systems or external systems based on a license from a third party.

The AI Act differentiates between several groups of AI systems by introducing quite strict requirements for the so-called high-risk AI systems (e.g. used for assessment of credit-worthiness or credit score) and transparency requirements for AI systems used for interaction with natural persons (such as chatbots). When it comes to financial institutions, it is expectable that they will have high level of exposure to requirements that apply to high-risk AI systems will be of relevance where they use AI based systems in any of the following areas:

- Assessment of credit score or creditworthiness of their clients;
- Staff recruiting including related advertising;
- Task allocation, monitoring and evaluation of performance among their staff members.

And while the AI Act primarily aims to establish a harmonized regulatory framework on AI in the EU, its impact will be far reaching and it will not stop at the borders of the EU Single Market. That being said, the AI Act will apply to non-EU providers of high-risk AI systems who place the AI system on the EU market as well as to non-EU providers and users of high-risk AI systems, where the output produced by the software is used in the EU. An example of the latter would be where the EU regulated firm enters into outsourcing agreement with a non-EU entity (e.g. an investment manager or third-party service provider) using AI systems to perform outsourced activities.

2 Requirements on financial institutions

Where the firm only acts as a user of a high-risk AI system, it will be subject to some limited requirements that (among other) oblige the firms to ensure that the system is being used in accordance with the instructions of use, implement necessary human oversight measures indicated by the provider as well as establish necessary record keeping and notification procedures etc.

On the other hand, firms acting as providers of AI systems will be subject to more extensive requirements that include (among other) obligations to establish dedicated systems for risk management, quality management and post-market monitoring, to ensure that the design of the software meets the standards under the AI Act.

When it comes to compliance with a number of organizational requirements for high-risk AI, the AI Act enables regulated credit institutions to rely on internal frameworks that they have established for the purposes of compliance with rules on internal governance arrangements, processes and mechanisms and risk management under the CRD/CRR framework. The existing national supervisory authorities that supervise regulated credit institutions will be responsible for their supervision in relation to compliance with the requirements under the AI Act.

3 Next steps

Even though only a limited number of AI systems is under the scope of the proposed rules, the AI Act encourages the financial institutions using other types of AI systems to establish internal frameworks for compliance with the new requirements on a voluntary basis. Given that the national supervisory authorities will be responsible for the supervision of compliance with the AI Act, its is highly likely that they will provide some additional administrative guidance at national level that will additionally incentivize the industry to ensure compliance with the new framework on a voluntary basis.

Whilst the new regime under the AI Act will bring many new obligations for financial entities using AI systems, it is still far from finalized and recent rise of generative AI systems has sent the EU lawmakers back to the drawing board. In December 2022, the Council of the EU has approved a **compromise version** of the proposed AI Act and the text still needs to go through the EU co-decision legislative making process. It also still remains to be seen how the final version of the AI Act will regulate the general-purpose AI models (like ChatGPT), given that the initial classification of AI systems differentiates between different types of AI used for specific purposes.

Whereas the main piece of the EU plan to become the first major jurisdiction with the clear legal and regulatory framework on AI is anchored in the AI Act, the EU Commission has recently published a new proposal that aims to provide higher level of legal certainty when it comes to civil liability for harm caused by AI systems. On 28 September 2022 the EU Commission has proposed a new Directive (**AI Liability Directive**) that is intended to adapt private law and make it easier for individuals and businesses to bring claims for harm caused by AI. AI Liability Directive will require Member States to implement new rules that shall lower evidentiary barriers for victims injured by AI based systems to bring civil liability claims.

To find out more about the AI Act and the AI Liability Directive and stay up to date with the forthcoming developments in this area visit our **Artificial Intelligence Act Hub**.

Conclusion

Use of AI in the financial services sector can undoubtedly change the way in which financial services are being provided and achieve better cost and time efficiency for financial institutions as well as potentially better investment outcomes. Nonetheless, the questions around compliance with the existing financial regulations remain at the top of the agenda for the financial institutions using AI based systems while the existing lack of clear regulatory guidance in this area may represent an impediment for adoption of AI based systems for some financial institutions.

And while the new EU regulatory framework on AI is finding its way through the complex maze of the EU legislative making process, the financial institutions will still need to find the way how to fit the use of AI systems into their existing compliance and risk management frameworks. In the meantime, the technology is rapidly developing: in the AI race that is just heating up, one after another, major technology companies have started to release their own AI based systems, each promising to reshape the business world that we know.

As the interest of the international business in AI is just rising, it seems that it is just the matter of time when the major financial institutions will announce that they are officially doubling down on AI. Once that happens, it will be important that the financial institutions define their strategy on the use of AI well in advance under due consideration of their client's needs, their risk management and compliance frameworks as well as applicable regulatory requirements. For the regulators on the other side, it will be important to keep pace with the technological developments as well as the related developments in the industry, in a better and faster way than they did with some other technological breakthroughs in the past.

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Taylor Wessing statistics published are correct as of April 2023.