

Public Statement

On the use of Artificial Intelligence (AI) in the provision of retail investment services

Introduction

1. The advancement of Artificial Intelligence (AI)¹ has the potential of transforming the landscape of retail investment services by offering unparalleled opportunities for efficiency, innovation and improved decision-making. While AI holds promise in enhancing investment strategies and client services, it also presents inherent risks, including algorithmic biases², data quality issues, and (potential) lack of transparency.
2. While the diffusion of AI is still in its initial phase and the development is not uniform across firms and Member States, the potential impact on firms' behaviours and retail investor protection is likely to be significant. Importantly, firms' decisions remain the responsibility of management bodies, irrespective of whether those decisions are taken by people or AI-based tools. To ensure compliance with MiFID II obligations and safeguarding investors' interests of AI-driven solutions, ESMA has decided to publish this Statement to provide some initial guidance to investment firms³ utilising AI, in light of their key obligations under MiFID II and to emphasise the imperative to always prioritise clients' best interests⁴.

Potential use of AI in Investment Services and related benefits

3. The adoption of AI by firms is still a heterogeneous phenomenon⁵. However various uses can be envisioned, each associated with distinct types and levels of risks, and are currently being explored and in some cases already adopted by firms. These include:

¹ Artificial Intelligence (AI) is a fast-evolving family of technologies. In order to ensure legal certainty, while providing the flexibility to accommodate future technological developments, The Artificial Intelligence Act defines 'artificial intelligence system' (AI system) as a "machine-based system designed to operate with varying levels of autonomy, that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments"

² Algorithm bias refers to systematic errors in a computer system that create unfair outcomes and can lead AI systems to inadvertently perpetuate, amplify, or introduce discrimination against certain individuals or groups based on race, gender, age, or other characteristics. Algorithm bias often arises from the data used to train AI models, reflecting historical inequalities, societal stereotypes, or the preferences of the developers themselves.

³ When referring to "investment firms" we also encompass credit institutions providing investment services.

⁴ ESMA notes that this Statement, based on MiFID II framework, is without prejudice to the broader EU framework on the digital governance (e.g., the mentioned AI Act and DORA), of which AI is a component, and to any additional actions that firms are expected to undertake to ensure compliance with it.

⁵ For example, study published by Oliver Wyman and UK Finance (a trade association of 300 financial intermediaries) in November 2023 noted that more than 90% of UK Finance members have already deployed AI in financial services.

- a. Customer Service and Support: AI-powered chatbots and virtual assistants could be used by firms to provide support to clients by answering queries, providing account information, etc.
 - b. Supporting firms in the provision of investment advice/portfolio management services: AI tools could be used by firms to analyse a client's information on knowledge and experience, financial situation (including risk tolerance), and investment objectives (including sustainability preferences⁶) in order to provide personalised investment recommendations or manage and rebalance client portfolios. As AI can process vast amounts of financial data, including market trends, historical data, and news events, to forecast market movements. This could be used by firms to develop investment strategies and identify potential investment opportunities that would be used for the abovementioned investment advice/portfolio management services. It could also be used to support investment advice and portfolio management, by monitoring the overall risk exposure of a client's portfolio and ensuring the characteristics of the portfolio remain aligned with the client's profile (in particular risk tolerance and investment objectives).
 - c. Compliance: some firms might use AI systems to summarise and analyse financial regulations; compare internal policies and procedures with legal requirements; for the detection of behaviours non-compliant with MiFID II investor protection rules; answer queries on the interpretation/application of relevant legislation/policy; prepare drafts of internal/external compliance reports.
 - d. Risk Management: AI could be used to evaluate the risk associated with different investment options (products, strategies, etc). It could also be used to monitor and manage the overall risk exposure of a client's portfolio.
 - e. Fraud Detection: AI systems could monitor data on transactions, internal communications between staff or external communications between staff and clients/counterparts for unusual patterns that may indicate fraudulent activity.
 - f. Operational Efficiency: AI can automate many tasks, such as data entry, report generation, and transaction processing. This could be used to allow employees to focus on more complex tasks. It could generally support the drafting of any firm documents/communications (for example: marketing communications including advertisements and social media posts; email/letters to clients).
4. It is important to note the Statement would aim not only to address scenarios where AI tools are specifically developed or officially adopted by the investment firm or bank but also

⁶ Firms are increasingly leveraging AI tools to process and analyse large volumes of qualitative and unstructured data, which play a crucial role in the broader context of sustainable finance. This includes, but is not limited to, the environmental, social, and governance (ESG) assessment of investment products. The application of AI can extend to various aspects of sustainable finance, enhancing the ability of firms to identify, evaluate, and integrate sustainability preferences into their investment and risk management processes.

extends to situations involving the use by firm staff of third-party AI technologies (such as Chat GPT, Google Bard, and others) with or without the direct knowledge and approval of senior management. The principles and controls outlined in this Statement would aim at reminding firms that they should have in place appropriate measures to also control the use of AI systems by employees in any form, including any third-party AI technologies, whether specifically envisaged or already adopted by the firm itself or without any the direct knowledge and approval of senior management.

Risks for firms and clients

5. While a thorough analysis of the potential risks of the AI phenomenon goes beyond the scope of this Statement, it is known⁷ that AI tools currently face challenges linked to:
 - a. Lack of accountability and oversight (over-reliance): There's a risk that both the service providers and clients might over-rely on AI for decision-making, neglecting the importance of human judgment. This over-reliance can be particularly risky in complex, unpredictable financial markets where AI may not accurately predict outcomes.
 - b. Lack of transparency and explainability / interpretability: Many AI systems are often "black boxes" and their decision-making processes would not be understandable by firm staff at all levels (from control functions to senior management). Additionally, inter alia the lack of explainability of AI models may also affect service quality. For example, lack of explainability may complicate the adjustment of underperforming investment or trading strategies.
 - c. Security/Data privacy: The collection, storage, and processing of the large amount of data required by AI tools (including personal data) raises significant privacy and security concerns.
 - d. Robustness/reliability of the output, quality of training data, and algorithmic bias: AI tools for natural language generation are known to "hallucinate" and produce outputs that are factually incorrect even if they sound realistic and accurate.⁸ In investment advice and portfolio management, hallucinated information can lead to misleading advice that involves unexpected risks or missed opportunities. Training data used to develop the AI tool can also introduce biases in the way results are

⁷ See inter alia:

- [BIS - Testing the cognitive limits of large language models](#)
- [UK Finance - The impact of ai in financial services](#)
- [ESMA - Artificial intelligence in EU securities markets](#)
- [AFME – Artificial Intelligence: Challenges and Opportunities for compliance.pdf](#)

⁸ Recent work has shown that Large Language Models (LLMs) trained on large text corpus are prone to suffer from hallucination generations where generated content is either in conflict with existing source or cannot be verified by the available knowledge resources. Empirical results published in May 2023 (see [link](#)) suggest that ChatGPT is likely to generate hallucinated in about 19.5% of responses. The issue of hallucination makes the deployment of LLMs potentially risky in real-world applications.

computed making predictions incorrect/inaccurate. These biases are often difficult to identify and correct.

MiFID II Requirements

6. While there is a broader, ongoing discourse regarding the development of a comprehensive EU legal framework for AI⁹, the focus of this Statement is the application of AI in investment services, viewed through the lens of existing MiFID II requirements. This Statement aims to guide firms utilising or planning to use AI technologies so they can ensure compliance with the key MiFID II requirements, particularly those pertaining to organisational requirements, conduct of business requirements, and the general obligation to act in the best interest of the client.

Client Best Interest and Information to clients

7. Central to the use of AI in investment services is the unwavering commitment to act in clients' best interest, an overarching requirement which applies irrespective of the tools that the firm decides to adopt in the provision of services.
8. Furthermore, investment firms should be transparent on the role of AI in investment decision-making processes related to the provision of investment services. In general, ESMA expects that when firms provide clients with information on how the firms use AI tools for the provision of investment services, they ensure that such information is presented in a clear, fair and not misleading manner.
9. Similarly, investment firms using AI for client interactions, such as through chatbots or other types of AI-related automated systems, should transparently disclose to clients the use of such technology during these interactions.

Organisational requirements – Governance, Risk Management, Knowledge and competence and Staff training

10. When integrating AI into aspects related to the provision of investment services, the role of the management body becomes pivotal in ensuring compliance with MiFID II organisational requirements. The firm's management body should have an appropriate understanding of how AI technologies are applied and used within their firm and should ensure appropriate oversight of these technologies. This oversight is crucial to ensure that the AI systems align with the firm's overall strategy, risk tolerance, and compliance framework. It is the responsibility of the management body to establish robust governance structures that monitor the performance and impact of AI tools on the firm's services. Additionally, senior management should foster a culture of risk ownership, transparency and accountability,

⁹ [Artificial intelligence act \(europa.eu\)](https://european-council.europa.eu/media/en/press-summaries/default/11474.pdf)

where the implications of AI deployment are regularly assessed, and appropriate adjustments are made in response to evolving market conditions and regulatory landscape.

11. Effective risk management frameworks specific to AI implementation and application are crucial. Investment firms should establish robust governance structures, conduct regular AI model testing, and monitor AI systems to identify and mitigate potential risks and biases.
12. When using AI tools in investment decision-making processes related to the provision of investment services, firms should ensure that the data used as input for the AI systems is relevant, sufficient, and representative, ensuring that the algorithms are trained and validated on accurate and comprehensive and sufficiently broad datasets. This necessitates a meticulous approach to data sourcing, whether the data is sourced internally or acquired from third-party providers. Moreover, the creation, training, testing, validation, and continuous analysis of data are integral processes that require rigorous oversight to maintain the integrity and performance of AI applications.
13. Investment firms should also develop and maintain robust risk management processes and procedures specifically tailored to address the unique challenges and risks posed by AI technologies. This includes identifying, assessing, and managing the risks associated with AI-driven investment decision-making, such as algorithmic biases, and data security vulnerabilities. ESMA expects firms to implement comprehensive testing and monitoring systems, applying the principle of proportionality, to evaluate the performance and impact of AI applications on their service offerings. This means that the extent and rigor of testing and monitoring should be aligned with the scale, complexity, and potential risks associated with the AI systems in use, ensuring that specific attention is given to areas where AI has the most significant influence on the firm's processes and client services related to the provision of retail investment services. It is also essential for these processes to be dynamic, allowing for timely adjustments in response to any changes in AI output or decision-making patterns or shifts in market conditions. Furthermore, clear documentation and reporting mechanisms should be established to ensure transparency and accountability in AI-related risk management practices.
14. The deployment of AI tools in various steps of the provision of investment services can be based on the acquisition of solutions developed by third-party service providers. In such instances, firms are reminded of the applicable MiFID II requirements regarding outsourcing of critical and important operational functions aimed at ensuring an adequate level of due diligence in the selection process of such providers along the value chain and the implantation of adequate controls.
15. Furthermore, ESMA notes that considering the importance given by MiFID II to the knowledge and competence of staff providing information about investment products to clients, firms that use AI for such activities must do so under heightened vigilance to ensure the same level of quality standards.

16. In this respect, robust controls should be established to ensure – ex-ante – the accuracy of information supplied to and/or utilised by AI systems in order to prevent the dissemination to clients of erroneous information or the provision of misleading investment advice. Furthermore, investment firms should implement sufficiently frequent ex-post controls to monitor and evaluate any process that involves the delivery of information directly or indirectly through AI-driven mechanisms. These post-interaction assessments are crucial in ensuring ongoing compliance with MiFID II obligations and safeguarding clients against the dissemination of any inaccurate or misleading information about investment products and services. Failing to maintain accuracy in these interactions could profoundly impact firms' clients and firms' responsibility towards them. Stringent oversight should be adopted by firms when employing AI in this context.
17. Finally, awareness within the organisation, especially among staff in control functions, is crucial in navigating the complexities of AI integration. For this purpose, firms should ensure adequate training programs on the topic of AI for relevant staff ensuring they are equipped to manage, interpret, and work with AI technologies.
18. Training should cover not only the operational aspects of AI but also its potential risks, ethical considerations, and regulatory implications. Relevant staff should be equipped with the knowledge to identify and address issues such as data integrity, algorithmic bias, and unintended consequences of AI decision-making. Fostering an organisational culture that encourages continuous learning and adaptation is vital, as AI technologies and regulatory landscapes evolve rapidly.

Conduct of business requirements

19. Stringent adherence to conduct of business requirements under MiFID II is paramount especially when using AI systems for the provision of investment advice and portfolio management services. The use of AI technologies in these domains requires a heightened level of diligence, particularly in ensuring the suitability of services and financial instruments provided to each client.
20. When AI systems are used in the provision of investment services, it becomes crucial to have robust controls to ensure that the AI systems used are designed and monitored for example in the context of product governance to align the distribution of products to the target market, or in the context of the assessment of suitability, to align recommendations and decisions with the client's financial situation, investment objectives (including sustainability preferences and risk tolerance), and knowledge and experience.¹⁰
21. Investment firms should implement rigorous quality assurance processes for their AI tools. This should include thorough testing of algorithms and their outcomes for accuracy,

¹⁰ For further details on the application of MiFID II requirements when using automated or semi-automated systems for the provision of investment advice or portfolio management (robo-advice) please see the ESMA "Guidelines on certain aspects of the MiFID II suitability requirements" (ESMA35-43-3172).

fairness¹¹, and reliability in various market scenarios. Additionally, firms should conduct periodic stress tests to evaluate how these AI systems perform under extreme market conditions.

22. Finally, firms should ensure strict adherence to data protection regulations to safeguard any sensitive client information collected for the purpose of the provision of investment services.

Record Keeping

23. ESMA expects investment firms to maintain comprehensive records on AI utilisation and on any related clients' and potential clients' complaints and ensure compliance with MiFID II requirements.
24. Firms are expected to maintain records that document the utilisation of AI technologies in the various aspects related to the provision of investment services. These records should encompass aspects of AI deployment, including the decision-making processes, data sources used, algorithms implemented, and any modifications made over time.

Conclusion and next steps

25. In conclusion, the use of AI in investment services presents both opportunities and challenges. Upholding MiFID II requirements and prioritising clients' best interests serve as guiding principles for investment firms leveraging AI. By fostering transparency, implementing robust risk management practices, and compliance with legal requirements, ESMA would aim to help firms ensure they harness the potential of AI while safeguarding investors' confidence and protection.
26. This Statement serves the purpose of initial guidance to firms on this key topic in light of MiFID II relevant obligations. Investment firms are encouraged to seek further resources and engage with their supervisory authorities to navigate complex AI-related challenges effectively.
27. ESMA and national competent authorities (NCAs) will keep monitoring the evolution of the phenomenon and of the relevant EU legal framework on AI to determine if further action is needed in this area.

¹¹ The term "fairness" encompasses the imperative to avoid any form of discrimination and to ensure equitable treatment across all demographic and socio-economic groups.