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AI IN FINANCIAL ASSET MANAGEMENT: EFFICIENCY AND CHALLENGES

In the context of the ongoing digitalization of financial markets, artificial intelligence (AI) has become a key driver of transformation in asset management. A synthesis of the current works about AI development [1; 2; 3], provides a comprehensive perspective on the impact of AI on the effectiveness of financial asset management by integrating technological, behavioral, and institutional dimensions.

First, AI fundamentally reshapes the logic of investment decision-making by significantly enhancing analytical precision. Unlike traditional econometric models, machine learning algorithms are capable of processing large-scale datasets and identifying complex nonlinear relationships among financial variables. This capability improves the accuracy of return forecasts, strengthens risk assessment, and enhances portfolio optimization. As a result, investment strategies become more efficient, particularly through improved risk–return trade-offs and reduced transaction costs due to automation.

At the same time, empirical evidence suggests that the effectiveness of AI extends beyond purely technical advantages. It is highly dependent on the quality of input data, the proper calibration of models, and the ability to interpret their outputs. AI enables the application of sophisticated investment approaches, such as factor investing and the use of alternative data, while simultaneously increasing the requirements for professional expertise among market participants.

However, the effectiveness of AI in asset management is also strongly influenced by investor trust. Behavioral studies indicate that investors tend to exhibit caution toward algorithm-driven decisions, especially when such systems operate as "black boxes" [4]. The lack of transparency can hinder adoption and limit the broader implementation of AI-based solutions. Conversely, increasing the explainability of models (explainable AI) and combining algorithmic insights with human judgment significantly enhances investor confidence and acceptance.

In parallel, the adoption of AI is accompanied by substantial institutional transformations. Financial institutions are gradually shifting toward data-driven management models, the role of data scientists is expanding, and new business models, such as robo-advisory services and AI-driven investment funds, are emerging. Under these conditions, issues of governance and regulation become critically important, as decision-making increasingly depends on algorithms that may be opaque or prone to errors.

Despite its advantages, the use of AI is associated with several risks and limitations. These include the problem of overfitting, dependence on data quality and availability, and potential systemic risks arising from the widespread use of similar algorithms across market participants. Additionally, the "black box" nature of many AI models complicates auditing and oversight, posing challenges for transparency and accountability in financial decision-making.

In conclusion, artificial intelligence is not only a tool for enhancing the efficiency of financial asset management but also a catalyst for a profound transformation of the entire investment ecosystem. Its effectiveness is multidimensional, determined not only by financial performance but also by investor trust, institutional quality, and the ability to manage associated risks. The most promising approach lies in integrating AI capabilities with human expertise, thereby achieving a balance between innovation, efficiency, and reliability in asset management.

References:

1. Mertzanis, C. (2025). Artificial intelligence and investment management: Structure, strategy, and governance. International Review of Financial Analysis, 107, 104599. https://doi.org/10.1016/j.irfa.2025.104599

2. Perret, J.K., Mandic, G., Herselman, D. (2026). Artificial intelligence in asset management: A study of its acceptance by investors. Discover Artificial Intelligence, 6, 299. https://doi.org/10.1007/s44163-026-00883-3

3. Fabozzi, F.J., Guida, T., Halperin, I. (2025). AI in asset management: Tools, applications, and frontiers. CFA Institute. https://rpc.cfainstitute.org/sites/default/files/docs/research-reports/rf_aiinassetmanagement_full-monograph_online.pdf

4. Artyukhov, A., Volk, I., Dluhopolskyi, O., Artyukhova, N., Zelikovska, O. (2024). Evaluating the quality of education: application of black, gray, and white box methods. Proceedings of the 11th International Scientific Conference "Information Technology and Implementation" (IT and I 2024): CEUR Workshop Proceedings, 3909, 242–251. https://ceur-ws.org/Vol-3909/Paper_19.pdf