How to Integrate AI into an Existing Investment Process - A Practical Guide

"AI will be the most transformative technology of the 21st century. It will affect every industry and aspect of our lives."
Jensen Huang, CEO at NVIDIA

Abstract: As the active asset management industry faces many challenges such as revenue pressures and rising costs, the integration of Artificial Intelligence (AI) can be the main solution to address these issues, maintain positive alpha and gain a competitive edge. This paper explains the potential of AI within the investment process and offers a practical roadmap for professional investors looking to embrace this technology. We identify three approaches to integrate AI into the investment process and analyse the benefits and drawbacks of each.

In addition, we explore the keys to make AI a permanent part of everyday investment practice. The focus is on achieving a seamless blend of AI capabilities with human expertise, ensuring that technology enhances rather than overrides the relevant insights of experienced investors. Effective implementation depends on more than just technical integration. It requires promoting a culture of acceptance and competence among portfolio managers.

AI can innovate data analysis, enhance objective insights independent of emotional biases and enable rapid adaptation to market changes. This forward-thinking attitude will redefine portfolio management and provide competitive advantage to those who fully embrace its potential. This paper is an essential guide for active professional investors and portfolio managers, outlining the path to leveraging AI for superior investment outcomes.

Introduction

In active investing, changes to the investment process are inevitable if alpha generation is to continue in the coming years. It is important to recognise that strategies that have been successful in the past may not deliver the same results in the years ahead, particularly as new technologies such as artificial intelligence (AI) and machine learning (ML) are increasingly integrated into the investment process by many active investors. The objective of modern asset management is to utilise data, technologies, and the experience of the human investor to achieve specific investment goals. Technological advances have the potential to increase portfolio return, or 'alpha', as well as improve operational efficiency, reducing management costs and time, and even decreasing portfolio risk.

The asset management industry is undergoing a significant transformation as a result of the emergence of AI. Faced with revenue and fee challenges, higher costs, and growing competition from passive funds and ETFs, the industry must embrace AI to maintain its competitive edge. AI can enhance various aspects of the overall business, including client-facing marketing and sales, internal processes such as compliance and risk management, and investment management. This paper will concentrate on the investment management aspect, while emphasising the necessity of integrating AI across all areas of the company. When we refer to asset management processes, we are specifically referring to the investment process.

In the area of investment, not just systematic asset management, but especially active, fundamental asset management is affected by AI. Portfolio managers increasingly use AI as a tool in their daily decision-making. The transformation is not simply because AI provides plenty of information, but especially because it transforms how we interpret this information into meaningful results and actions. While having access to a wide range of data is valuable, the real power of AI lies in its ability to analyse and make sense of this data quickly and without bias. Historically, gaining access to information has been a significant challenge. For example, prior to the 1980s, obtaining comprehensive data on companies or specific sectors was a time-consuming process. The advent of the Bloomberg Terminal, which offered real-time data, marked a significant turning point in the field. Its early adopters were able to gain a distinct advantage, acting on new information more swiftly than others. This represented a significant shift at the time. Similarly, today AI plays a similar role. It is not about having more information and data, as we already have an overwhelming amount. Rather, the disruption comes from how AI can swiftly and objectively interpret this data, enabling investors to make informed decisions faster than ever before.

As previously stated, our position is that AI should not be seen as a replacement for human investors, but rather as an invaluable addition to existing tools. Experienced human investors possess qualities that AI does not have, such as intuition, critical thinking, adaptability to unforeseen circumstances, ethical/moral considerations and emotional intelligence. While AI offers substantial benefits in the investment process, it also has some drawbacks that must be carefully managed. These include

Active investing must evolve to keep generating positive alpha, especially with AI and ML becoming integral. Past strategies might not work anymore.

The asset management industry faces revenue and competition challenges, needing AI to stay competitive.

AI can boost returns, efficiency, and reduce costs and risks. AI helps not just in data access but in interpreting it efficiently, aiding faster decision-making. AI complements rather than replaces human investors due to its advantages and drawbacks.

This paper guides on integrating AI effectively, offering insights from an experienced fund manager.

hallucinations, data dependency or overfitting. Both human investors and AI complement each other very well. It is crucial for investors and portfolio managers to recognise the advantages offered by AI, rather than being deterred by its potential.

Many investors are already aware of the benefits that AI can bring to their investment processes, including improved portfolio performance, enhanced risk management, and greater cost and time efficiencies. Nevertheless, the practical integration of AI or ML in their investment routines remains a challenge for many. This document is meant to assist in overcoming these hurdles by addressing the following questions: What are the various ways to integrate AI into my investment process? What is the most effective method for my firm, taking into account complexity and AuM?

This paper is an invaluable resource for active professional investors and portfolio managers seeking to integrate AI seamlessly into their investment strategies. While the primary focus is on equity investment, the principles discussed are broadly applicable to other types of asset classes as well.

The author of this paper has over 15 years of experience as an equity fund manager and is recognised as an expert in the application of AI in investing. His approach combines a comprehensive understanding of traditional asset management with the latest technological innovations, offering investors a distinctive perspective that enables them to navigate the evolving landscape of asset management.

Essential Steps in the Investment Process of Equity Investors

Investors can utilise advanced technologies such as AI and ML at various stages of the investment process to enhance their results. It is recommended that each asset manager identifies the areas where these technologies will have the most significant impact, which may vary from firm to firm. Consequently, identifying the most effective areas for improvement in terms of performance and efficiency must be conducted on a case-by-case basis for each firm.

Investors can use AI and ML to improve different stages of their investment process. Each asset manager should determine where these technologies will be most effective, as this will vary from firm to firm.

The investment process normally begins with the creation of a market strategy, which relies on an understanding of market conditions and trends. AI can provide objective insights and suggest strategies at this stage.

Stock selection is critical and involves stock screening and stock analysis. AI and ML can also assist in portfolio construction and optimisation.
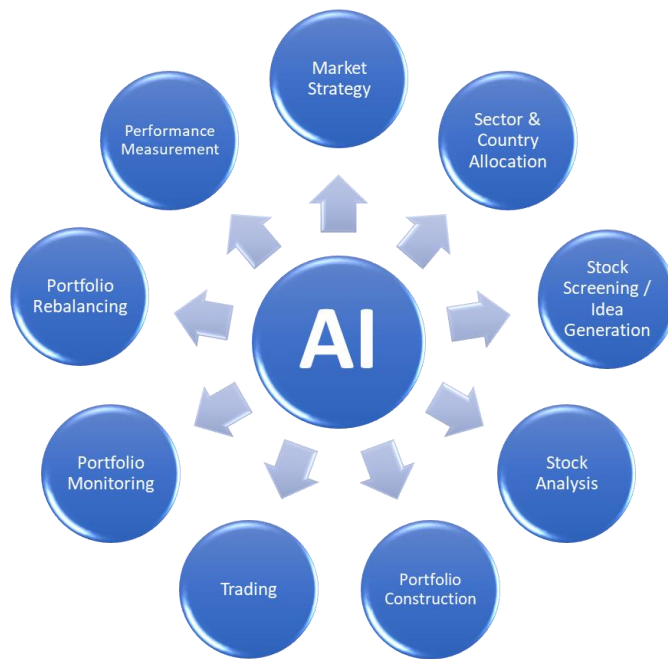
Chart 1: Investment Circle

The investment process typically begins with the formulation of a well-defined market strategy. This requires a good understanding of the key market conditions and trends. The market strategy serves as a foundation for the investment process and is subject to regular review and improvement in the context of investment committee meetings. At this stage, AI can provide an objective and fact-based view of the current investment landscape and suggest possible strategies.

As the investment process progresses, the interdependence between sector and country selection becomes apparent. Each choice is linked to the initial strategy.

A very important part is the stock selection stage. This phase is pivotal in bridging the crucial third and fourth steps of the process: stock screening and thorough analysis of the stocks – also called fundamental research. For further insights on innovative technologies used in stock screening, I would recommend reviewing our earlier paper, which compares traditional methods with those based on ML, and includes a practical case study[1].

Another vital part is the construction and optimisation of portfolios with the support of AI and ML, which is detailed in another one of our previously published papers[2].

Despite its potential, AI is still prone to inaccuracies and errors. Therefore, relying solely on AI-generated recommendations without thorough evaluation could endanger investment outcomes. It's crucial to exercise due diligence and maintain a balanced approach when incorporating AI into decision-making. As mentioned above, AI should therefore be seen as a complementary tool for professional human investors, enhancing their expertise rather than replacing it.

This paper, however, discusses the overall picture. How AI or ML can be integrated into an existing investment process without causing significant disruption.

Different Ways in Integrating AI in the Investment Process

One of the key topics when discussing modern investment strategies is the possibility of utilising AI and ML within the current portfolio management framework. This discussion frequently revolves around the integration of AI into every stage of the investment process.

To effectively incorporate AI as a helping tool into the daily activities of investment firms and portfolio managers, there are generally three approaches taken:

1. Developing AI capabilities internally (building your own AI systems)

2. Employing AI software created by other companies

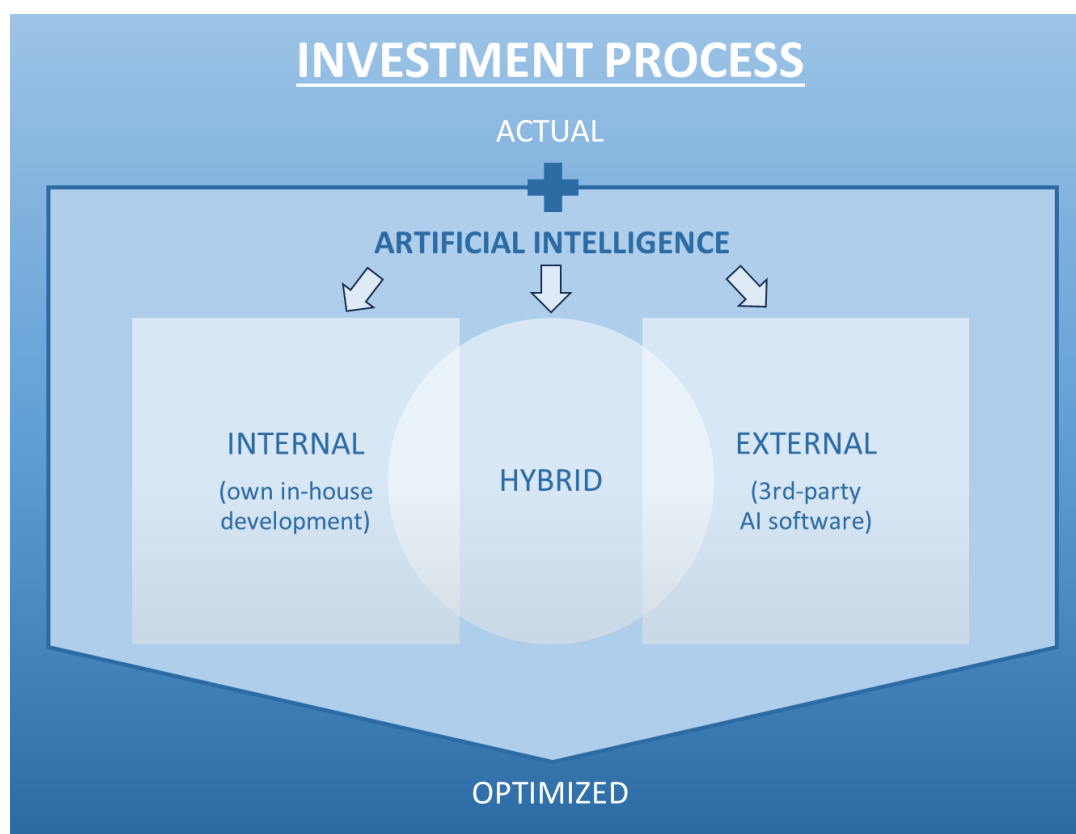3. Combining both internal development and external software in a hybrid approach

Chart 2: Optimisation of the investment process with AI

Each of these approaches has its own set of advantages and disadvantages, which we will explore in more detail below:

1) Developing in-house AI capabilities: The development of in-house AI capabilities is a key focus for many asset management firms. In particular, larger firms are choosing to create bespoke AI systems tailored to their specific needs. This process involves collaboration between IT specialists, AI professionals, and investment teams to develop algorithms that align perfectly with the firm's unique investment strategies. This bespoke approach allows for significant customisation and fine-tuning, which is particularly beneficial for specialised investment strategies that might not be well served by off-the-shelf software.

One of the key benefits of developing in-house AI is the ability to leverage internal data sources. Larger asset managers often have extensive internal buy-side research that provides additional valuable information, which can be utilised in the development of AI algorithms. This research is often unstructured, such as analyst opinions, comments and notes in various formats, which AI can effectively interpret and analyse. To realise the full potential of AI, it is vital that all research and data is in digital format. In practice, many portfolio managers still prefer taking notes on paper, which cannot be used by AI. It is therefore essential to ensure that all research and notes are digitised and retrievable.

In addition to internal data, most data used in AI systems is external. This includes structured data such as financial statements and price data, as well as unstructured data such as news articles and earnings calls.

While the development of in-house AI capabilities offers numerous benefits, it also presents several challenges. Such an approach typically requires a substantial financial investment, extensive development time, and the continuous involvement of dedicated IT personnel (internal or external) for maintenance and updates. Furthermore, although this approach is tailored to the specific needs of the client, there is a risk that the technology may become obsolete. Staying ahead of the curve with the rapid advancements in AI technology is a challenge, making it difficult to keep the system up to date with the latest trends and capabilities.

To get a better understanding of the complexity of own AI developments, we briefly mention the five stages of model building[3] that are often used in practice:

1. **Business Analysis:** Identify stakeholders and communicate model performance through tailored reports

2. **Data Process**: Acquire and prepare appropriate data for model input

3. **Model Design and Development:** Select suitable model types and ensure implementation meets stakeholder KPIs through controls and monitoring

4. **Model Deployment:** Test, approve, and release the model into the production environment

5. **Monitoring and Reporting:** Continuously monitor and refine data and models through ongoing business analysis

Especially larger asset management firms are building in-house AI systems tailored to their needs.

This involves collaboration between IT, AI and investment teams and allows bespoke solutions and the use of internal data. However, all research needs to be digitised first.

While offering significant benefits, in-house AI requires significant investment, maintenance and keeping up on of AI advances. Long-term viability needs to be assessed.

In conclusion, this approach offers significant flexibility, but it is essential to carefully evaluate its long-term viability and upkeep.

2) Implementing third-party AI software: For asset management firms lacking internal IT and AI expertise and facing budget constraints, adopting third-party AI software represents an excellent solution. These tools are typically cost-effective, easy to implement, and utilise the latest technological advancements. They can enhance various aspects of the investment process. For instance, a cloud-based platform with machine learning algorithms can optimise portfolios with a user-friendly interface or API connection.

The annual fee for external third-party AI software for investors is between €10,000 and €30,000[4]. In comparison to the costs of external analysts or an additional internal analyst, which are significantly higher, this approach represents excellent value for money.

While external options may not offer the same level of customisation as internally developed solutions, they allow smaller firms to access advanced AI capabilities without the significant investment required for in-house technology development. Additionally, these products are continuously improved based on feedback from a wide range of users, ensuring they remain effective and up-to-date.

However, it is essential to ensure these tools are suitable for the European market. Many providers are based in North America and may primarily serve American clients and focus on US markets like the S&P500. Therefore, it is essential to verify the compatibility of these AI tools with the European market to ensure successful implementation.

3) Adopting a hybrid strategy: Some investment firms have opted for a hybrid approach, which involves a combination of in-house development and external AI software. This method exploits the benefits of both approaches. For instance, an asset manager may create a bespoke tool for in-depth, specific analyses with proprietary data while relying on third-party solutions for other core operations, such as continuous portfolio monitoring or construction. This strategy enables firms to tailor their tools to their specific operational needs and investment tactics, while also leveraging the latest innovations from specialized AI vendors. Ultimately, this balanced approach allows for the greatest degree of customisation and access to cutting-edge technologies.

For asset management firms without in-house IT and AI expertise, third-party AI software is a cost-effective and easy-to-implement solution. Annual fees are much cheaper than hiring analysts.

External tools offer advanced AI capabilities and regular updates, though less customization than in-house options.

It is necessary to ensure compatibility with the European market, as many tools are designed for North American markets.

Each strategy offers distinct benefits and poses unique challenges (see Table 1). The development of in-house AI capabilities offers high customisation, but this comes at a significant cost in terms of investment and maintenance. Third-party AI software is a cost-effective and user-friendly option, but it may lack customisation and require careful selection to ensure market suitability. A hybrid approach offers the best of both worlds, combining customisation with access to the latest technologies. The decision between these strategies should align with the specific needs, capabilities, and strategic objectives of the asset management firm.

	Pros	Cons
Internal AI systems	- Bespoke solution - High flexibility - Use of proprietary data sources - Ownership of the intellectual property developed - Potential for a competitive edge	- High investment requirements - Requirement for IT/AI staff (in-house or external) - Long development time - High complexity of development - Risk of outdated technology - Need for continuous updating - In-house computing power required
External AI software	- Affordable, low initial cost - No requirement of own IT/AI people - Short implementation time - Newest technology - Continuous improvement - Scalable to growing business needs - Compliance with industry standards - User friendly, cloud based	- Not a bespoke solution - Less flexible - Typically no use of proprietary data - Possible security concerns: portfolio data on external servers
Hybrid approach	- Can have all the above benefits depending on individual implementation - Risks mitigation by not fully relying on a single approach	- Less cons than above - Requires effective coordination to ensure all components work harmoniously

Table 1: Summary of different methods

Lasting Implementation

The integration of AI into the investment process requires a careful consideration of several key factors to achieve the best results and ensure its widespread acceptance by users.

Firstly, it is vital to conduct a comprehensive evaluation and identify the most effective areas within the investment process where AI can make a significant contribution (see Chart 1). The objective is to implement AI in areas where it will have the greatest impact and enhance human skills effectively. Strategically applying AI can notably enhance the decision-making process by offering sophisticated analytical tools and data-driven insights that support and enhance the intuitive and strategic abilities of human investors.

Once the areas where AI could be beneficial have been identified, the next step is to decide on the best implementation strategy. This may entail developing solutions in-house, utilising external applications, or a combination of both – a hybrid approach. The selected method must not only meet the specific requirements of the investment process but also integrate seamlessly with the existing technological infrastructure.

It is also essential to maintain a harmonious balance between AI and human expertise. It is important to view AI as a supportive tool that enhances, but does not replace, the intricate skills of human experts. This is particularly important in situations where data may be limited or incomplete, such as during initial public offerings (IPOs). In this context, the investment professionals' experience, judgement, intuition and critical thinking skills are invaluable. Humans excel at interpreting complex market dynamics and sentiments, which are areas where AI is still developing.

One challenge frequently overlooked is the actual onboarding and adoption of AI by investors or portfolio managers, who are expected to use these tools. While some firms already highlight their AI capabilities, the true measure of success is the extent to which these tools are used by portfolio managers in their daily work. For AI to deliver its full benefits, it must be implemented effectively and embraced by the relevant stakeholders. It must also be integrated into the existing operational workflows. The objective is to streamline the workflow, ensuring that AI is not a obstacle but rather an asset.

To ensure the long-term integration of AI into asset management, it is essential to maintain clear and ongoing communication about its benefits. It is vital to provide comprehensive training programmes to equip portfolio managers with the necessary skills and confidence to use these new tools effectively. Furthermore, having role models or mentors to guide and demonstrate how to use AI effectively can prove invaluable. It is crucial to provide ongoing support and encouragement to ensure the long-term adoption of AI in day-to-day operations. This strategy ensures that AI becomes an invaluable and integral part of the investment process, empowering professionals to make more informed and strategic decisions.

Integrating AI into the investment process involves several steps for success.

First, identify the areas where AI can have the greatest impact and augment human capabilities. Then choose an implementation strategy, whether internal, external or hybrid, and ensure it fits with existing technology. Balance AI with human expertise.

Ensure that portfolio managers or the end users adopt AI tools by integrating them into workflows and providing them with training. Ongoing support, clear communication and role models are essential for the long-term success and acceptance of AI in asset management.

In summary, this means:

1. identifying the optimal areas of application for AI in the investment process

2. selecting the appropriate implementation method

3. maintaining the balance between AI and human expertise

4. integration and acceptance of the AI solution

5. sustainable implementation of AI

Takeaways

The application of artificial intelligence and machine learning is strongly transforming the field of portfolio management. Rather than merely enhancing existing processes, these technologies are redefining the asset management business. In the current market, it is crucial for every portfolio manager to integrate AI into their investment process to ensure they can continue generating positive alpha in the future.

AI offers a range of capabilities that make it an indispensable tool for modern portfolio management. Firstly, AI is highly dynamic, allowing it to adapt swiftly to new market developments. For instance, it can immediately modify the investment strategy in response to market shifts from growth to value (as we experienced at the end of 2021). This adaptability enables portfolio managers to respond to market changes with greater agility and precision.

Secondly, AI significantly increases the capacity for data analysis. It can process and analyse vast amounts of data far beyond the capabilities of humans. This ability to handle big data enables portfolio managers to make more informed decisions based on comprehensive data insights, leading to more robust investment strategies.

Furthermore, AI offers a neutral perspective by presenting factual information in an objective manner, free from human emotions. In investment decision-making, objectivity is of the highest importance, as emotional biases can often lead to suboptimal outcomes. Most investors have stocks they particularly love – but are they currently the best investment? The use of factual data by AI ensures that decisions are made based on solid evidence rather than subjective judgement.

Another significant advantage of AI is its capacity for continuous self-improvement. AI systems learn and evolve by incorporating new data, constantly refining their algorithms and improving their performance over time. This self-learning capability ensures that AI can adapt to changing market conditions and continuously enhance its predictive accuracy and effectiveness.

In this paper, we have learned that there are three different approaches to integrating AI into the investment process: Developing AI capabilities internally, using external AI software, and combining the two in a hybrid approach. Each has its own advantages and disadvantages.

In light of the rapid advancements in AI, asset managers who delay adopting AI are at risk of falling significantly behind. Conversely, those who adopt a determined and dedicated approach to AI are likely to excel not only in integrating AI but also in leading the industry's transformation. Proactive managers will be better equipped to address the inherent challenges and gain a strong competitive edge. Embracing AI enables them to optimise their processes, improve decision-making and drive better outcomes for their clients. Forward-thinking managers recognise the importance of adopting AI in a timely manner to ensure continued relevance and competitiveness in the evolving financial landscape. Consequently, by committing to

AI and ML are transforming portfolio management. These technologies are essential for modern portfolio managers to continue generating positive alpha.

AI is dynamic, quickly adapting to market changes, analysing vast amounts of data and providing objective insights. It continuously improves as it learns from new data.

There are three ways to integrate AI: develop it in-house, use external software, or take a hybrid approach.

Managers who adopt AI will gain a competitive advantage, while those who delay will fall behind. Embracing AI improves decision-making, optimises processes and ensures relevance in the evolving financial landscape.

AI now, they will be positioned as leaders who are ready to navigate and shape the future of asset management.

In conclusion, while AI offers significant benefits and is transforming portfolio management, it also demands careful consideration of its long-term viability and maintenance. The advantages of AI in adapting to market changes, enhancing data analysis capacity, providing unbiased insights, and continuously improving itself make it an essential tool for modern portfolio managers. As the competitive landscape continues to evolve, the integration of AI will become not just an advantage but a fundamental necessity for success in asset management.

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SMC is an innovative consulting boutique specialized in Artificial Intelligence, Digital Transformation and Change Management processes. Initiated by industry-leading experts, SMC directs its expertise towards serving clients in Asset Management and the broader Industrial sector.

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Sources and Comments

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