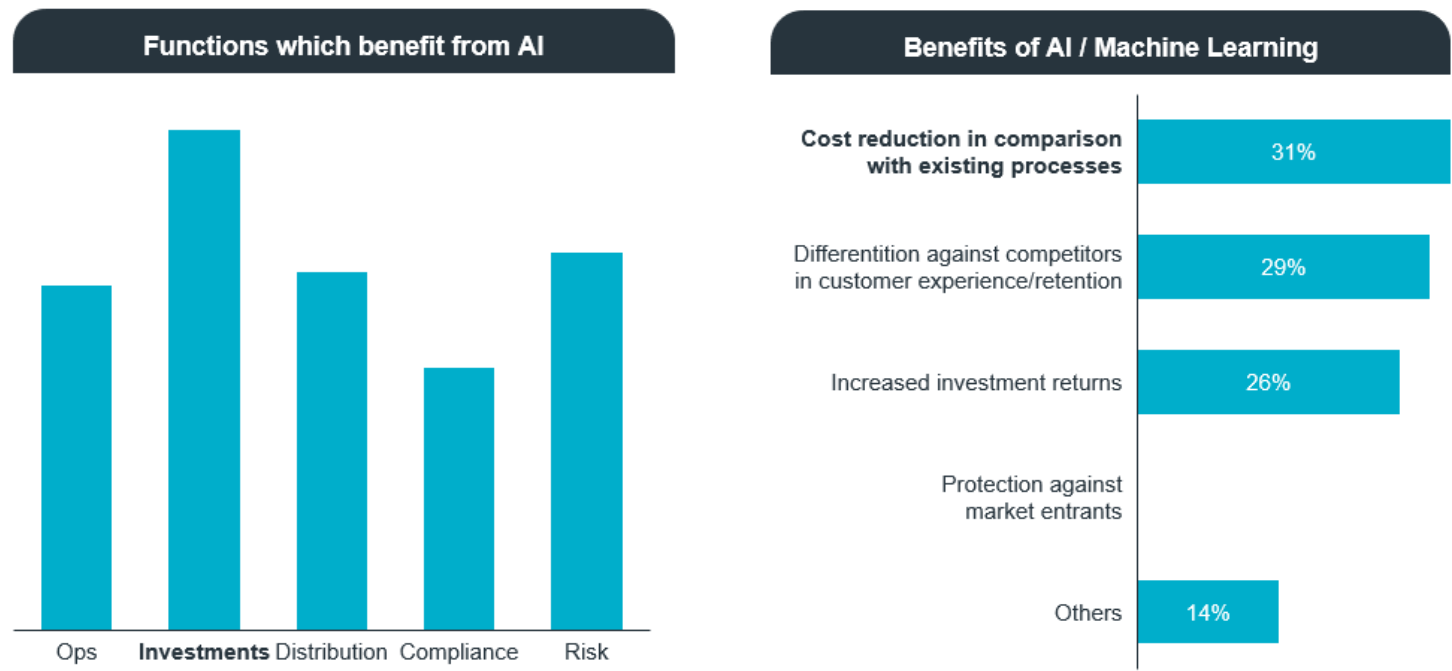


Practical AI Use Cases for Pension Funds

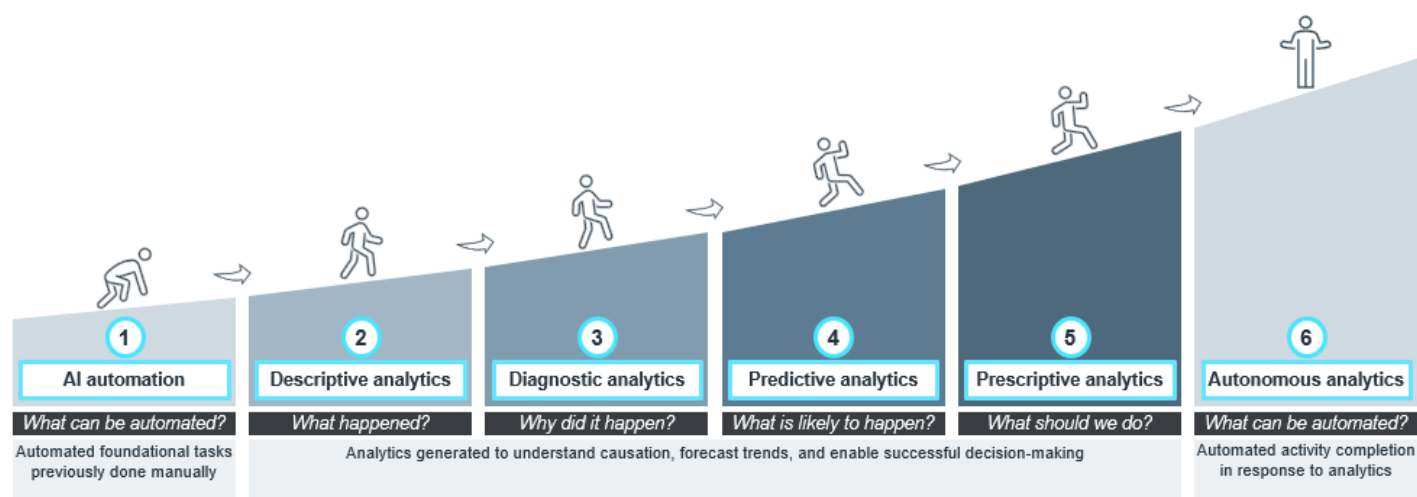
Introduction

Artificial intelligence has moved well beyond the experimental stage and is now a strategic priority for pension funds. As data volumes grow and operational complexity increases, AI is evolving just as quickly, offering powerful tools to address today’s challenges with real impact. A recent Alpha survey captured respondent sentiment that they believe there is value to be created across all functions:

What are the **benefits** and on which **function** does the industry think these will be felt?



To start realizing these benefits, pension plans need a focused AI strategy grounded in proven use cases and supported by production-ready vendor solutions. We typically see pension plans starting their journey now by exploring opportunities for automation, however, there is future potential to implement increasingly more mature solutions that can predict, prescribe, and even act autonomously.



While there are widespread examples of use cases for AI, this paper highlights three forward-looking AI applications that are being actively assessed by leading pension funds and outlines key considerations for scaling them effectively and responsibly.

Use Case 1: Transaction Cost Analysis (TCA) for Pension Trading Programs

AI improves TCA for pension funds by analyzing historical and real-time trade data to predict execution costs, identify slippage patterns, optimize broker selection, and extract insights from unstructured trade notes, ultimately leading to more informed execution strategies and lower implementation shortfall.

Pension Objective	AI-Enabled Capability	Potential Benefits
Demonstrate and enhance best execution across high-notional, multi-asset trades triggered by cash-flow matching, index-maintenance events, LDI adjustments, and derivative overlay programs	- Real-time ingestion of market micro-structure data to predict slippage and venue impact before routing orders - Adaptive algo parameters that respond to intraday liquidity conditions, minimizing market footprint - Post-trade clustering that benchmarks fills versus peer pension funds and broker groups, flagging value-add or drag sources - Scenario engines that simulate cost under alternative execution strategies to inform policy reviews - Behavior sentiment (e.g. idea decisions tools)	- Execute large portfolio shifts more efficiently in-house, reducing reliance on external transition managers and avoiding associated high fees - Potential for improved performance and alpha generation - Hard evidence of best-execution for boards

Why it matters: Benefit payments are predictable—execution costs are not. AI-driven TCA lets teams rebalance faster without bleeding returns.

Use Case 2: Intelligent Document Processing (IDP)

AI parses unstructured documents by using natural language processing (NLP) to extract key data (such as capital call amounts, dates, and wire instructions) from PDFs and emails, reducing manual effort, minimizing errors, and accelerating downstream processing.

Pension Objective	AI-Enabled Capability	Potential Benefits
Streamline GP Capital Calls, Infra Drawdowns, and Rent Rolls (No Manual Data Entry Required)	• Pre-trained libraries of GP and service provider templates that auto-classify PDFs and emails • Secure APIs that write validated cash flow data directly into portfolio management or data warehouse systems • Natural-language Q&A functionality that allows users to ask questions over structured data (e.g., “List uncalled commitments due in the next 30 days”) • Connector kits that convert mixed PDF and Excel documents into cloud-ready formats within minutes	• Reduction in processing time • Real-time liquidity forecasts to support benefit payment schedules • Full audit trails that meet compliance standards • Provides the scale necessary to process large data volumes quickly and accurately • Reduces ‘fat finger’ scenarios to increase data accuracy

Why it matters: Private markets now account for over 40% of AUM at many pension plans. When documents can “read themselves,” month-end NAV processes compress from days to hours, freeing up teams and accelerating reporting cycles.

Use Case 3: Consolidated Holdings Intelligence for Total-Fund Management

AI enables consolidated holdings intelligence by integrating trade, cash flow, and commitment data across public and private assets, mapping it to a unified security master. It uses natural language processing and advanced analytics to surface exposures, factor tilts, and scenario impacts, thereby supporting faster, more informed total fund decisions.

Pension Objective	AI-Enabled Capability	Potential Benefits
Provide a single, near-real-time view of exposures across public, private & overlay books	- Generative AI assistants that link statements to a centralized security master, enabling natural-language queries like “Where are we overweight compared to peers?” - Integrated holdings platforms that consolidate trades, commitments, and cash flows across allocator workflows into interactive, drill-down dashboards - Cloud-native data hubs (e.g., powered by Snowflake) that bring together trade, risk, and ESG data under governed access controls	- Research and exposure analysis that used to take days can now be done in hours - Strategic asset allocation reviews are faster and more insightful, revealing hidden risk and factor exposures - Enables advanced stress testing, including liquidity and scenario modeling

Why it matters: Pension boards are moving beyond asset class silos toward total fund, factor-based, and scenario-driven decision-making. AI-powered holdings intelligence provides the data foundation needed to support this shift with speed, accuracy, and transparency.

Challenges & Guardrails: What Pension Funds Needs to Consider

While AI unlocks major efficiencies and insights, it also introduces practical risks that pension funds must manage to deploy these tools responsibly. Below are three key challenge areas, along with what to watch for and how leading organizations are mitigating them:

Theme	What to Watch	Mitigation
Data Foundation	Without proper data management, AI models can amplify errors, overlook key patterns, or produce misleading results, undermining trust and effectiveness	Implement strong data governance practices—including clear data ownership, standardized formats, and consistent definitions—across all sources. Additionally, invest in data quality checks, cleansing processes, and robust integration tools before training or deploying AI models to ensure the data is complete, accurate, and fit for purpose
Data Security	Depending on the use case, AI tools are often required to process sensitive trading and beneficiary data in third-party clouds which is prohibited by many pension funds	Consider whether an in-house hosted approach is necessary, or other approaches like using a federated model or 'data clean room' make sense where models can be trained across an aggregate view of multiple decentralized data sources without actually sharing the raw data itself



Theme	What to Watch	Mitigation
User Adoption	Monitor for resistance to change, inconsistent adoption across teams, or misuse of AI tools without guidance	Establish clear change management processes, offer hands-on training and guardrails, and create sandbox environments that empower teams to safely experiment and discover AI-driven solutions, fostering organic use case development and embedding AI into daily workflows

Conclusion

Many pension funds are intrigued by the potential for AI to create tangible value for pension funds: reducing costs, accelerating insights, and automating complex investment workflows. But as adoption moves from isolated pilots to enterprise-wide integration, success will depend on disciplined execution and clear strategic alignment.

To realize AI's full potential while maintaining trust and control, boards and executive teams should:

- **Establish clear guardrails** on data governance, model transparency, and ethical use
- **Prioritize proven use cases** with strong business cases and ready-to-deploy vendor capabilities
- **Invest in internal readiness** by embedding cross-functional governance and building foundational data and integration infrastructure

Pension plans that take a focused, pragmatic approach will not only unlock near-term gains but also develop the organizational muscle needed to evolve with AI as it advances, thereby ensuring long-term value for members and beneficiaries.



About the Author



Heather is an experienced Director in Alpha's Toronto office specializing in operating model design and large-scale enterprise platform transformation (varied experience primarily with BlackRock Aladdin, State Street Alpha / CRD, and SimCorp). Heather has worked with most of the Canadian 'Maple 8' pension funds and has experience advising other asset owners globally. Heather heads Alpha's Global Long-Term Investing Hub which brings together a community of pension / sovereign wealth fund leaders to facilitate global knowledge sharing.