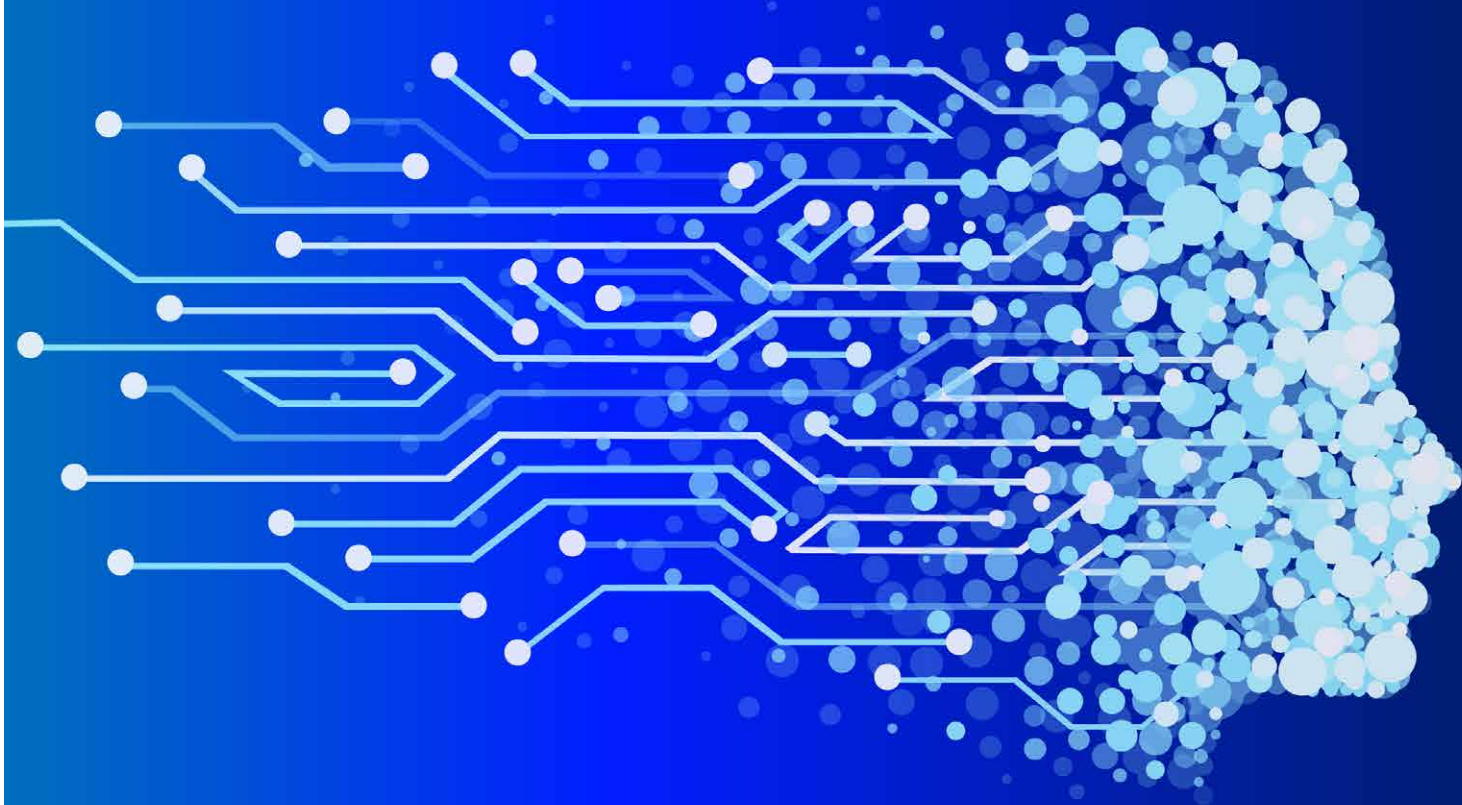


WHITE PAPER

MAKING MORE FROM MACHINES

Insights from the *AsianInvestor/Refinitiv* Asia-Pacific survey
“New technologies for a new investment era”



In partnership with

AsianInvestor

REFINITIV™ 

INTRODUCTION AND METHODOLOGY

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In late 2019, *AsianInvestor* collaborated with Refinitiv in surveying executives from leading asset owners and fund houses in Asia-Pacific – covering individuals in various roles across senior management, investing, technology and data analysis. The questions focused on the current adoption of artificial intelligence (AI), machine learning (ML) and natural language processing (NLP) within asset allocation and other key aspects of portfolio management, as well as on how the role of these new technologies might develop and influence investment decisions going forward.

WHY DID WE CONDUCT THIS SURVEY?

Nobody doubts the disruptive nature of technology on the investment industry; investors have long used computer systems to help them run portfolio management, data, risk, trading and back-office functions.

But innovations over recent years have made it possible to take this much further. Data can now be processed in vast volumes and at great speeds; traders can buy and sell securities ever-quicker and cheaper; and back-office operations are far more efficient than ever before.

The next wave is widely tipped to involve tools such as artificial intelligence (AI), machine learning (ML) and natural language processing (NLP).

Already AI, ML and NLP have made in-roads in certain organisations and in specific areas of the investment process. Progress has been staggered, though, with the varying speeds and extent of implementation typically linked to the budget, time and people being dedicated to these initiatives.

THE NEXT WAVE IS WIDELY TIPPED TO INVOLVE TOOLS SUCH AS ARTIFICIAL INTELLIGENCE (AI) MACHINE LEARNING (ML) AND NATURAL LANGUAGE PROCESSING (NLP).

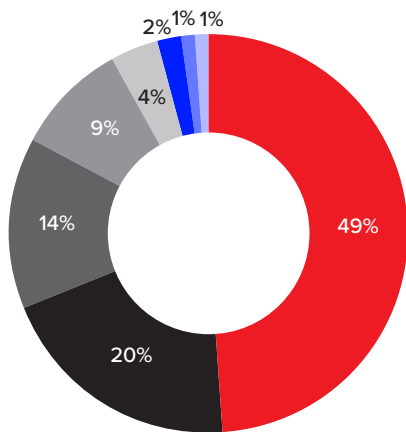
Yet the pace-setters – mostly on the asset management side of the industry – are no longer alone. A growing crop of institutions from across sectors and geographies are eyeing how they can (and should) use new technologies within various aspects of portfolio management – whether using AI to process big data for deeper insights, for instance, or applying ML or NLP to enable algorithms to enhance processes.

It is critical, therefore, to understand the potential for new technologies within investing, based on awareness and application to date, as well as the objectives and likely catalysts for more widespread adoption going forward.

EXECUTIVE SUMMARY

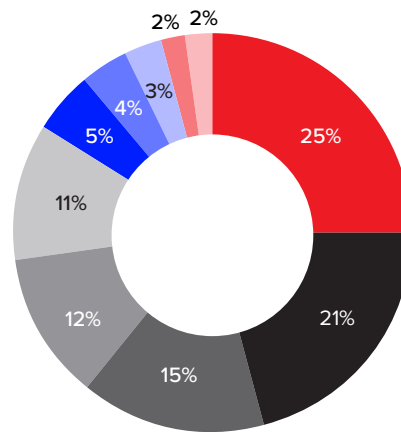
More than 175 individuals responded to the survey to share their insights. These included:

Type of institution



- Asset Manager
- Insurance Company
- Other
- Hedge fund
- Pension fund
- Sovereign wealth fund
- Endowment
- Government investment entity

Job role



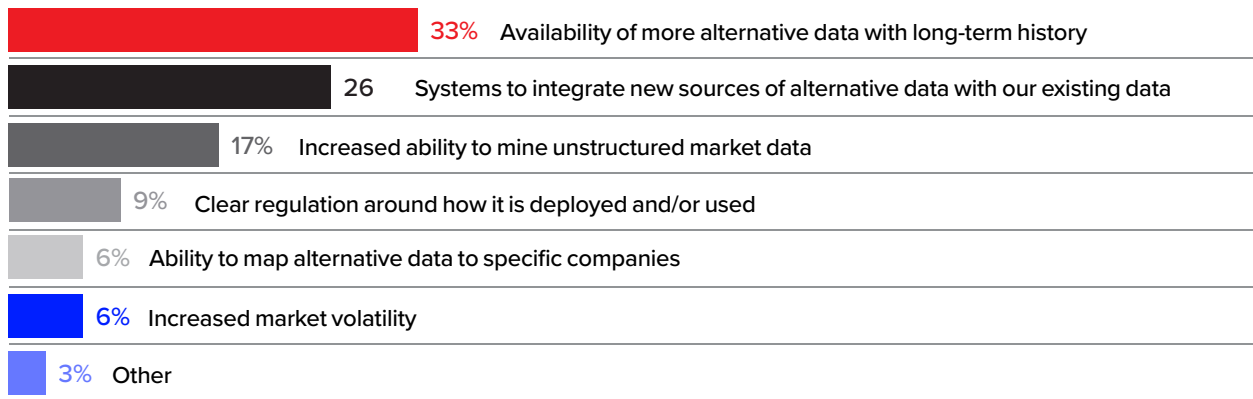
- Portfolio Manager
- Other
- Chief Investment Officer
- Chief Executive Officer
- Senior Investment Executive
- Chief Information Officer / Chief Technology Officer
- Head of Research
- Risk Management
- Market Data
- Compliance

Key take-aways across all survey respondents – a mix of asset owners and fund management firms:

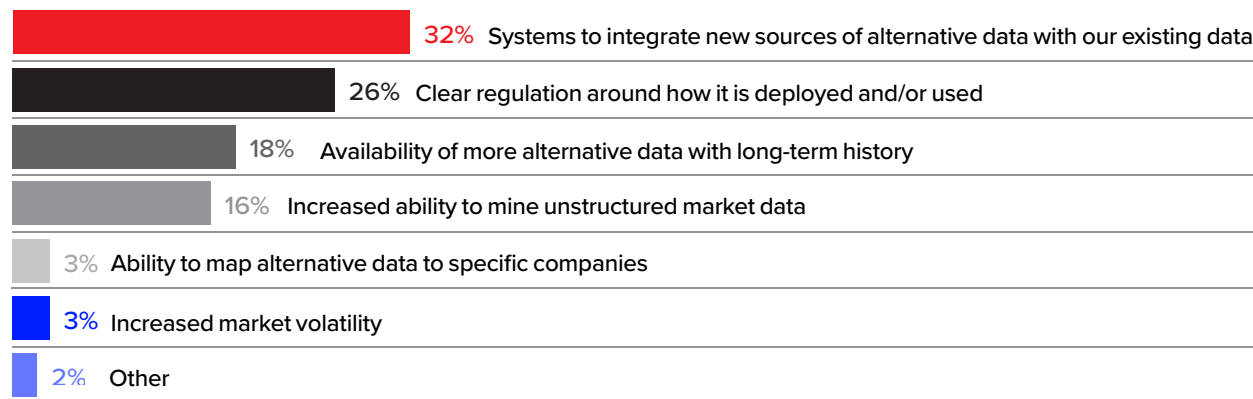
- Only one-third of survey respondents have adopted new technologies in various parts of their trading and asset allocation processes. While two-thirds of survey respondents are yet to use AI, ML or NLP, some are testing these tools and have plans to adopt them going forward
- The two most important goals of new technologies for respondents are: (i) generating additional alpha; and (ii) managing risk more effectively
- The three most influential ways in which new technologies have the potential to impact the investment process for asset owners and fund managers are: (i) asset allocation; (ii) factor building; and (iii) new trading ideas

- The quality of available data is the biggest concern among respondents when looking to incorporate new technologies in investment decisions
- The key barriers at many firms to the greater use of tools such as AI, ML and NLP are: (i) budgets; (ii) management belief in – and support for – new technologies; and (iii) time for implementation
- Most market participants broadly agree that portfolio managers’ and traders’ jobs are most at risk as a result of the adoption of new technologies – yet demand for new technologies from investment teams is high
- Investment executives who responded to the survey see the availability of more alternative data with long-term history as the most powerful catalyst for more widespread adoption of new technologies in investing. Systems to integrate new sources of alternative data with existing data are also important to this group – in line with what data-focused and tech executives see as their priority in order to drive adoption of AI, ML and NLP

Potential catalysts for more widespread adoption of new technologies in investing – according to investment executives



Potential catalysts for more widespread adoption of new technologies in investing – according to data/tech executives



REDEFINING PORTFOLIO MANAGEMENT

WHERE ARE WE NOW?

It is perhaps inevitable that we are witnessing the integration of AI and other technologies into the financial system at different speeds.

Amid the challenges for the investment industry are the disparate systems that are referred to as 'legacy' technology mixed with those focused on new services. It seems to be with the latter that new tools can make the most notable impact.

Take the insurance industry as an example. It struggles with efforts to apply new technology to the actuarial data that has traditionally been used by insurers to assess risk over many years.

ONLY 5 OUT OF THE 46 RESPONDENTS TO THE SURVEY WHO WORK FOR INSURERS CONFIRMED THEIR ORGANISATIONS HAVE ADOPTED ANY OF AI, ML OR NLP IN VARIOUS PARTS OF THEIR TRADING AND ASSET ALLOCATION PROCESSES.

The slow adoption of new technologies within this sector in Asia is highlighted by the fact that only 5 out of the 46 respondents to the survey who work for insurers confirmed their organisations have adopted any of AI, ML or NLP in various parts of their trading and asset allocation processes. Although a few are testing their potential, the majority (at least three-quarters) are not there yet – and plans to change this seem few and far between.

Asset management firms, meanwhile, appear to be more proactive in adopting new technologies in various parts of their trading and asset allocation processes, based on feedback from respondents.

Building investment factors and managing investment-related risks are the key drivers for them to use tools such as AI, ML and NLP.

Further, of those fund houses not yet at this stage, many of those individuals who responded to the survey confirmed plans to adopt new technologies going forward.

Adoption of artificial intelligence, machine learning and natural language processing in trading / asset allocation processes

YES,

20% for building investment factors

8% for investment risk management

5% for intra-day trading

2% for surveillance and compliance

NO,

31% not using, but planning to use new technologies going forward

22% not using, and no plan to use new technologies

12% not yet, but testing new technologies

Priority goals for using new technologies



DRIVERS FOR USING NEW TECHNOLOGIES

In appreciating why new technologies matter to market participants within the investment industry, the overall sentiment among respondents pinpointed the ability to generate additional alpha as the primary driver, followed by risk management.

Digging a bit deeper, enhancing performance via more alpha was a particular focus for investment executives who provided their views. Yet managing risk more effectively is the priority for those individuals working within data and technology-related roles.

At the same time, especially for investment executives, they are looking to asset allocation, factor building and new trading ideas as the main ways that new technologies can enhance the investment process.

Further, when exploring the asset classes for which more detailed insights via new technologies would be useful, listed equities was the overwhelming favourite – selected by **61%** of respondents. This was followed by:

- Fixed income – **20%**
- OTC derivatives – **8%**
- FX – **6%**
- **(5% did not specify)**

LEADING BY EXAMPLE

Some of the market leaders within the asset owner community by size and presence are paving the way for new technologies by pioneering the use of AI, ML and NLP.

Enhancing both returns and cost efficiency tend to be two of the key, common goals.

According to recent *AsianInvestor* interviews, for example, Dutch pension fund manager APG is among those asset owners that are ahead of the curve. A major focus of the initiatives and systems that APG has implemented, for example, are data management and automation. The firm has developed an alternative data platform for processing and analysing alternative data sources for fundamental stock selection.

Another recent *AsianInvestor* article noted that the Teacher Retirement System of Texas, in the US, has also been an early adopter in strengthening its technology capabilities. Its main goal has been to support its approach of increasingly insourcing the management of its private market assets. Initially this led to more accurate risk measurement and modelling. The use of new technologies now facilitates much better sector and geographic information, too.



IN JAPAN, THE GOVERNMENT PENSION INVESTMENT FUND (GPIF) HAS, IN RECENT YEARS, BEEN AMONG THE LOUDEST PROPONENTS OF NEW TECHNOLOGIES – IN PARTICULAR, AI.

The shift among asset owners towards spending more on tech and data resources has also been apparent within several Asia-based institutions.

For example, Australia's Future Fund and Singapore state investment fund GIC have both appointed their first chief technology officers in the past three years, according to *AsianInvestor* research.

In Japan, the Government Pension Investment Fund (GPIF) has, in recent years, been among the loudest proponents of new technologies – in particular, AI. The institution has outsourced its AI project to Sony Computer Science Laboratories (Sony CSL), with the aim of optimising its fund manager structure.

The project is now trying to create a self-learning technology to improve asset manager portfolio monitoring, reported in *AsianInvestor*.

In line with the view of many investment professionals, the role of AI in the way that GPIF or other asset owners want to use it is not to replace fund managers, but rather to monitor decisions more effectively and comprehensively.

Within the insurance space, meanwhile, an *AsianInvestor* article reported that Muang Thai Life has also been looking to technology to improve its investment function. The second-biggest insurer in Thailand has developed an in-house AI project for the investment risk team to help identify alpha in the local equities market – and has gradually been moving towards integrating it into its portfolio management processes after three years of development and testing. The objective is to use quantitative algorithms and deep learning to identify risk signals, from which the team can switch assets between equities and cash depending on these indicators of how markets looks set to move.

A desire to meet sustainable investing goals is another way AI is playing a growing role. Ping An, the Chinese insurance group, is among those institutions that has been deploying this tool to help it gather and analyse data to help achieve its investment goals relating to environmental, social and governance (ESG), according to *AsianInvestor* research.

This essentially consists of two elements: an integrated management platform and an intelligent investment platform. The former, launched in 2019, collects and sorts out ESG data to form a knowledge base – effectively a store of large amounts of processed data and information.

REALISING A NEW VISION

DEALING WITH THE DATA CHALLENGE

Regardless of the pace or scope of adoption of new technologies among asset owners and fund houses to date, new technologies can offer significant potential to influence and impact investment processes and performance – assuming the investment industry can address some of the concerns and shortcomings identified by respondents.

Data is all-pervasive among the various challenges to the greater adoption of AI, ML and NLP. This is both in terms of the availability of the data as well as its quality.

Muang Thai Life, for example, has found this within the context of implementing its risk management function, given that lots of data – and especially the right data – is required to build an AI platform.

Working with partners is one way to overcome this, in line with how Japan’s GPIF has tackled the problem through working with Sony CSL for its AI project.

Yet such partnerships cannot resolve all data-related concerns.

According to the survey, by far the biggest challenge (45% of respondents) in getting the right data to support AI and ML, is the accuracy of information about the coverage, history and population of the data.

Other hurdles include:

- Cleaning and normalising the data
- Identifying incomplete or corrupt records
- Having capacity to manage the size and/or frequency of the data

Key question-marks over using new technologies in investment decisions

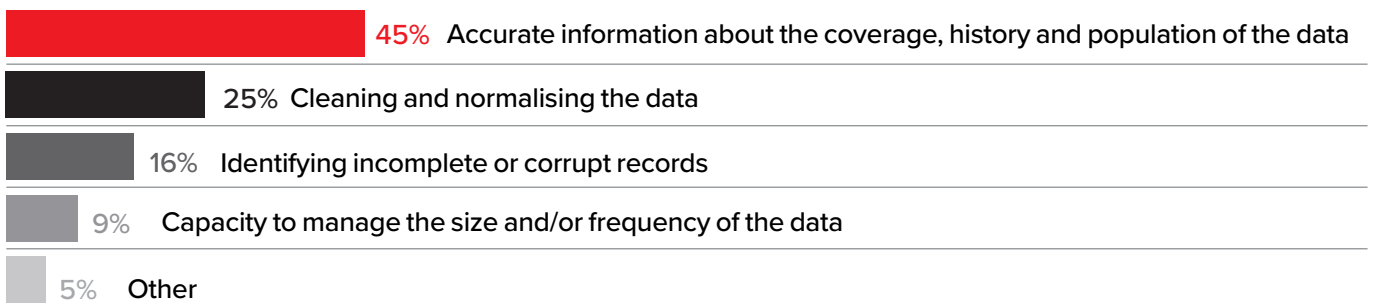


According to respondents, the top three datasets needed to ensure new technologies are most effective are:

- Investment performance data
- Market data
- Customer profile information

In most cases, asset managers are probably best placed to exploit the AI opportunity because they have so much data to call on – assuming these firms can harness its quality to help them ‘engineer’ and ‘manage’ it.

Top challenges in getting the right data to support new technologies



This is where firms such as Ping An Asset Management has been able to deploy deep-learning AI technology. A recent *AsianInvestor* article said the firm has been focusing on extracting high-level features and non-linear patterns in data to generate alpha in markets that traditional quant strategies have failed.

BROADER CONCERNS FORM MORE BARRIERS

Other than data, budgets represent a key obstacle for many organisations looking to adopt new technologies, so say **31%** of respondents.

This is likely tied to doubts over the commitment of senior management to implement AI, ML and NLP solutions, often stemming from a lack of proof of their added value – either in terms of performance, or via gains in relation to cost savings, efficiency or risk management.

The view of the more optimistic industry practitioners, meanwhile, is that testing and adopting new technologies simply takes time.

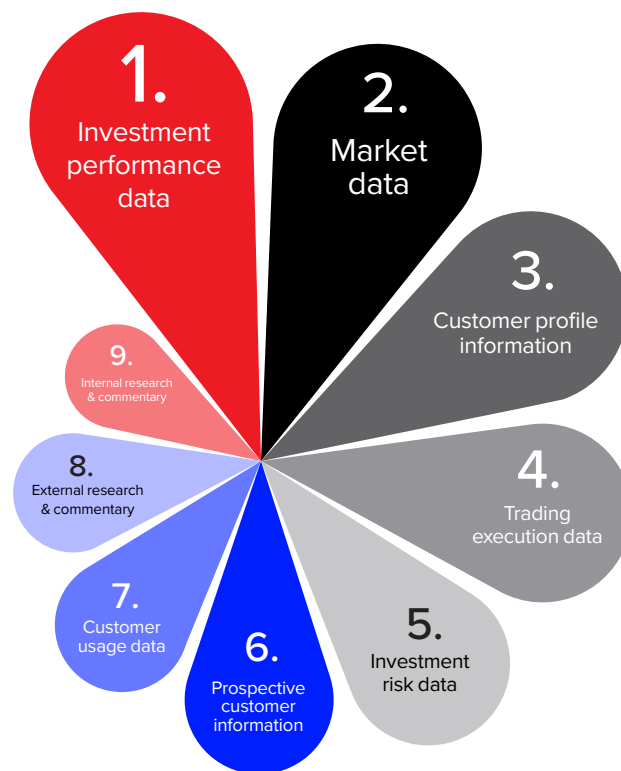
For many for asset owners in Asia, for example, the issue is that AI remains at a conceptual stage and will need some years to establish enough historical back-testing and relevant data for an effective tool to become viable.

There are also concerns among investment professionals, as well as data and tech executives, about whether tools such as AI provide enough transparency to satisfy fiduciary responsibilities.

This topic was, in fact, a discussion point at the World Economic Forum (WEF) event in Davos, Switzerland, in early 2020 – asking whether AI can, or should, be held responsible for bias or a lack of transparency in its decisions.

Some institutions have already started to address this issue. Another *AsianInvestor* article on APG, for example,

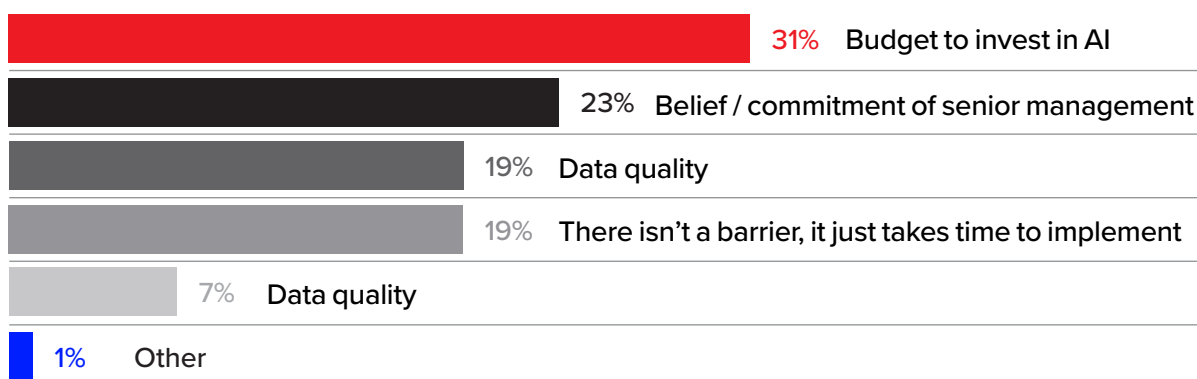
Priority datasets to make new technologies most effective



highlighted that the firm employs what it calls a ‘Digital Butler’ – an investment-decision support platform for real estate that collects, cleans and analyses data and automates the investment process step-by-step. In practice, this makes decisions faster, integrates more data and increases efficiency.

Such a systematic approach to decision making also helps in explaining to clients why certain acquisitions or disposals have been made.

Biggest barriers within organisations to greater use of new technologies



FORGING A NEW INVESTMENT FUTURE

MANAGEMENT TO DRIVE DEMAND FOR NEW TOOLS

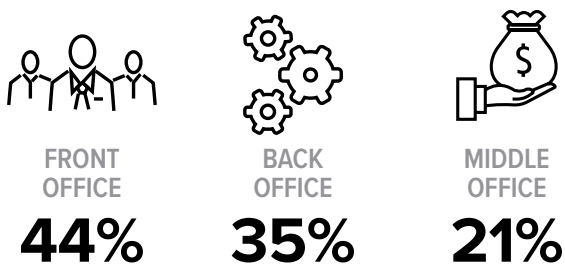
There is every reason to expect new technologies to play a greater role in investment decision-making going forward.

Despite concerns raised over the belief of senior management in new tools in general, these executives are perceived as broadly supportive of adopting tools like AI, ML and NLP – nearly **60%** of survey respondents across investment as well as data and tech roles say they are either “very committed” (**32%**) or “somewhat supportive” (**27%**). And in another **30%** of instances, senior management is open to “experimenting” with these technologies.

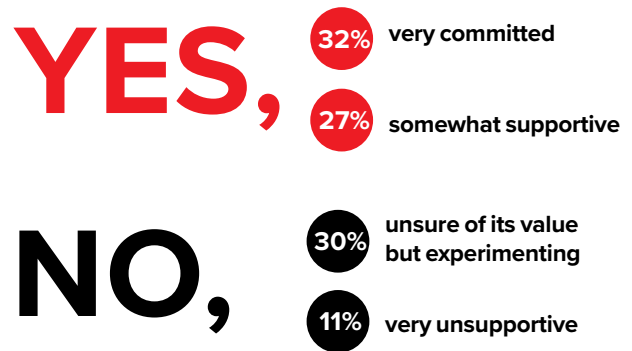
This backing is important given that the majority (**42%**) of respondents believe internal demand for new technologies is most likely to come from senior management. This is ahead of other key functions:



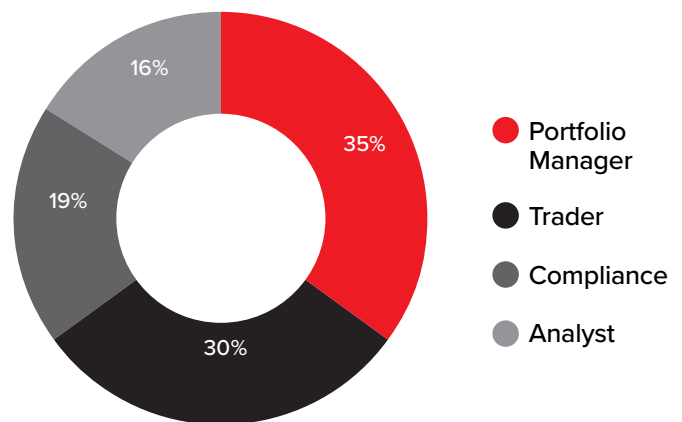
Yet the impact of new technologies on headcount cannot be ignored. In general across asset owners and fund houses, the areas of the organisation likely to be most affected are:



Support of senior management for new technologies within investment decisions



Job roles most at risk from adopting new technologies



More specifically, and in line with this, many respondents pinpoint the roles of portfolio managers and traders as being most at risk if AI, ML and NLP become entrenched.

CREATING NEW CATALYSTS FOR CHANGE

The need to navigate market volatility and uncertainty is inevitably a growing focus among investors of all types.

This desire to hedge the downside further sharpens the spotlight on the potential for AI and other new technologies.

Quant algorithms, for example, or safety strategies that measure volatility spikes, are front-of-mind in seeking clarity over how data can feed into portfolio management decisions.

As a result, rather than persist with human analysis in such a process, the need for an automated system of controlling downside risk is becoming ever-more acute.

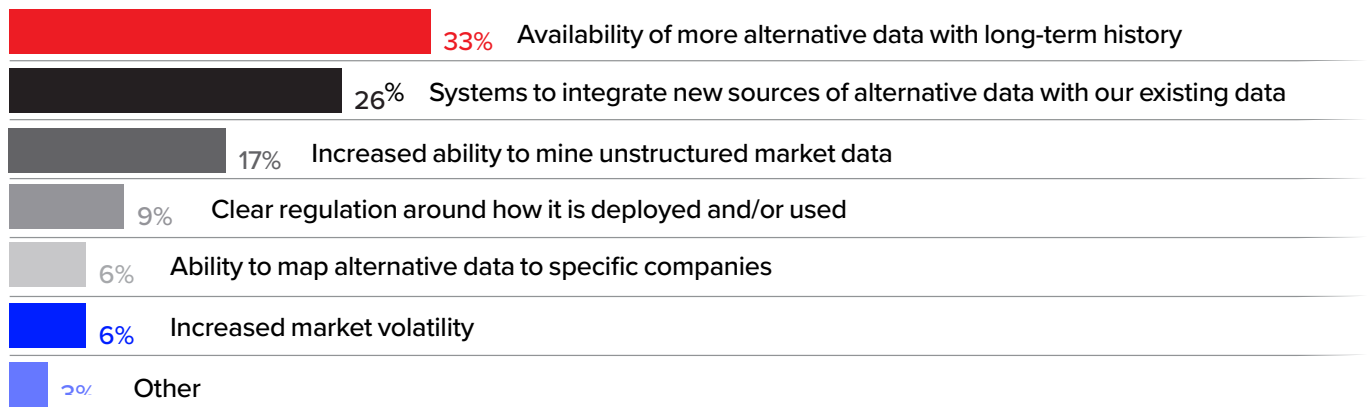
Yet, there are various other drivers that survey respondents predict will led to new technologies being used more within portfolio management.

Investment specialists are calling for more alternative data with a long-term history, along with systems to integrate new sources of alternative data with existing data. Further, an increased ability to mine unstructured market data would also make an impact for these individuals.

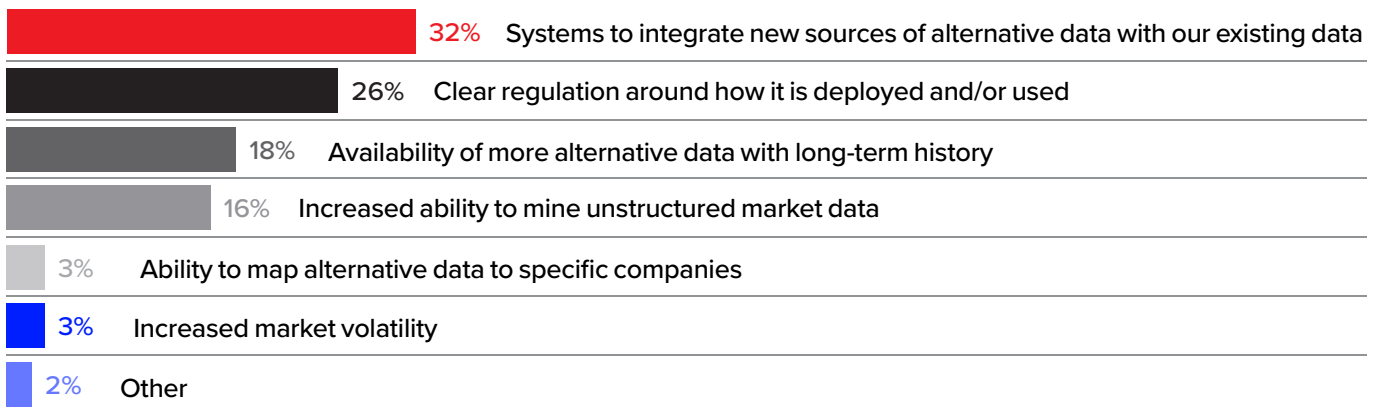
By contrast, data-focused and tech executives have a slightly different perspective on the potential catalysts for AI, ML and NLP.

They view systems to integrate new sources of alternative data with existing data as the priority, closely followed by clear regulation around how new technologies are deployed and used.

Potential catalysts for more widespread adoption of new technologies in investing – according to investment executives



Potential catalysts for more widespread adoption of new technologies in investing – according to data/tech executives



WHERE NEXT FOR PORTFOLIO MANAGEMENT IN ASIA

FIVE KEY FORCES TO RESHAPE PORTFOLIO MANAGEMENT IN ASIA

Based on the views of such a wide range of senior individuals across key roles at many large and high-profile asset owners and fund houses across Asia, it is important to note several key themes that will likely have an ever-stronger influence on the investment industry. These include:

- **AI, ML and NLP will play an increasing role in asset allocation and trading** – given that one-third of survey respondents said they ‘plan to use new technologies going forward’, with another 15% actively testing such tools with a view to adopting them.
- **The use of AI, ML and NLP will mainly centre on generating additional alpha and managing risk more effectively** – according to how the majority of respondents view the importance of various potential benefits of new technologies. Operational efficiency, cost reduction and governance will be less of a priority.
- **Investors will increasingly focus on the quality of data required to implement AI and ML** – the priority is investment performance and market data, followed by customer profile information, trading execution data and investment risk data. There is also a greater need than ever before for alternative data with long-term history. This will, in turn, put pressure on internal as well as external data providers. By contrast, research and commentary will become less important than previously.
- **There will be greater allocation of budgets (and management attention) to systems** – the goal is to be able to ensure investment teams can integrate new and existing data in a bid to overcome barriers to the adoption of new technologies.
- **At least some aspects of the role of portfolio managers and traders will be outsourced to AI, ML and NLP** – these jobs are considered by survey respondents to be at more risk than any others from the benefits of new technologies. Back-office and middle-office functions face a lower threat, although compliance officers and analysts might also come under some pressure.

