Leader or Laggard?
How Data Drives Competitive Advantage in the Investment Community

Are you confident that you can generate forward-looking insights from your data?

70% Data Leaders
43% Data Laggards

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Leader or Laggard? — How Data Drives Competitive Advantage in the Investment Community is a State Street report on the strategies that leading asset managers and asset owners are using to gain a competitive advantage from data. In August to September 2013, we commissioned the Economist Intelligence Unit to conduct a survey of more than 400 financial services executives representing a cross-section of the investment industry, with a roughly equal balance between asset owners and asset managers. Respondents were globally distributed, with roughly one-third based in North America, one-third in Asia Pacific and one-third in Europe. All data featured in this report is derived from the State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit, unless otherwise noted. To round out our research, the survey results were supported by in-depth interviews with industry executives conducted by Longitude Research.

Figure 1: Survey Respondents by Type

Source: State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit
Executive Summary

Data has become the lifeblood of business. It flows behind almost every decision, financial transaction and client exchange. But as data volumes grow exponentially, organizations must answer a difficult question: How can they manage this complex mass of information in a way that leads to smarter decisions and better results?

This is a challenge that has become particularly acute for asset managers and asset owners (collectively described as institutional investors in this report). In a fast-changing environment, they need to act swiftly and decisively to seize opportunities. They are racing to keep pace with a deluge of regulations, all of which place major demands on their data infrastructures. They also need analytics tools that can integrate risk and performance measures across multiple asset classes. Faced with these urgent challenges, the vast majority of institutional investors are ramping up spending on managing data.

This report outlines the key challenges that asset owners and managers face as they seek to harness the power of data and analytics. Drawing on a global survey of more than 400 institutional investors, our research reveals an industry that is increasingly divided between “data leaders” on the one hand, and “data laggards” on the other. The former are companies that harness data and analytics for competitive advantage and the latter still struggle to manage and exploit the full potential of their data — both internal and external. At this critical moment in the financial industry’s evolution, we identify the key steps institutional investors need to take to be on the right side of the data divide.
Data as a Differentiator

The ability to aggregate, analyze and transform data has become key to institutional investors' ability to compete. It's no surprise that 91 percent of respondents in our survey say that data and analytics is a key strategic priority, and for 37 percent it is their single most important strategic priority.

The right tools can provide a competitive edge. Two-thirds of executives in our survey agree that leading-edge data and analytics capabilities will be among their most important competitive advantages in the future. But highlighting the data divide, a much smaller proportion of respondents — 29 percent — strongly agree that they are already gaining a competitive advantage from their data today.

Investment in data and analytics is rising. Eighty-six percent of respondents have increased their investment in data and analytics infrastructure in the past three years. One in 10 respondents has increased its investment by more than 20 percent. These investments will be targeted at tools to support decision-making in the front office, and solutions to manage risk and regulatory compliance more efficiently.

How Data Leaders Widen the Gap

DATA LEADERS …

- Transform “big data” into smart data. Seventy percent of data leaders express a high degree of confidence that they can generate forward-looking insights from their data, compared with only 43 percent of data laggards
- Use knowledge as power. Nearly three-quarters of data leaders (72 percent) express a high level of confidence in their ability to integrate performance analytics with risk analytics, compared with only half of data laggards
- Trade better, faster. Sixty-four percent express a high level of confidence in being able to optimize electronic trading strategies, compared with only 53 percent of data laggards

BY CONTRAST, DATA LAGGARDS …

- Face a data dilemma. One-third of data laggards find that the complexity of managing data distracts key employees from focus areas — compared with only 7 percent of data leaders
- **Fall behind the pack.** Only half of data laggards think their investment data and analytics capabilities are keeping pace with the growth of their business, compared with 92 percent of data leaders

**Mastering Data: Priorities for Action**

Institutional investors are ramping up investment into technologies and platforms that will help them extract deep value from data. Some clear priorities emerge from our research:

- **Managing risk across multi-asset portfolios.** Risk analytics is an area where fewer respondents expressed confidence in their capabilities. Many are using separate software tools to support different asset classes and therefore struggle to gain an integrated view of risk across portfolios. And, as portfolios become more diversified and embrace assets with very different risk profiles, the shortcomings of this approach become increasingly apparent.

- **Enabling smarter, faster investment decisions.** Better, more accurate and timely data is key to making better investment decisions, developing value-generating strategies and — importantly — enabling institutional investors to act on these insights in real time. When asked more specifically where they will spend more money on data and analytics, order management and execution management systems (OMS/EMS) come out on top of wish lists (cited by 86 percent of respondents) with portfolio optimization tools second (76 percent of respondents). Both of these areas are driven by this need for better investment decisions at faster speed.

- **Learning how to master regulatory complexity.** Regulatory pressures continue to intensify — but the data leaders in our survey feel much more confident that they can keep pace with the demands of compliance. These leaders have invested in data infrastructures that are flexible enough to adapt to rapidly evolving reporting requirements across multiple jurisdictions.

**Achieving a Data Advantage**

As data becomes increasingly central to their strategic concerns, institutional investors will continue to invest in technologies that help them extract more insight from this vital asset. They will also strengthen their skills and capabilities in this area while, where necessary, outsourcing aspects of data management to specialist partners. Armed with the right talent, technology tools and strategies, the data leaders will increasingly dominate the financial landscape of the future.
Introduction: The Data Crunch Hits the Investment Community
The business success of asset owners and managers is now intrinsically linked to their ability to capture, process, analyze and report on a growing sea of data.

Ninety-one percent of industry executives in our survey call investment data and analytics one of their business’s leading strategic priorities, with 37 percent singling it out as the most important. Cash is following conviction, with 86 percent of respondents reporting that they have increased investment in data and analytics in the last three years.

Figure 2: How do the most senior leaders at your institution view the importance of investment data and analytics relative to other major strategic priorities?

8% Mid-level strategic priority
1% Low-level / Not a strategic priority
54% High strategic priority
37% Most important strategic priority

Source: State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit
Big Data Creates Global Issues

The importance of data reflects its role in a series of challenges for organizations in all industries. These begin with addressing the mind-boggling growth of data volumes: global IP traffic is projected to reach 554 billion gigabytes per month by the end of 2016. This is more than 110 times all of the information estimated to have been created by human beings from the dawn of civilization until 2003. Financial data has mirrored that general trend, but there are indications that institutional investors’ IT infrastructures are not coping well with these volumes. A recent report from experts at the US Treasury’s Office of Financial Research comments: “Financial market data volumes are growing exponentially. One should thus expect traditional data management technologies to fail, and they have.” In particular, it adds, back offices have not kept up with developments in either their own front offices or other industries.

Data volume is just one of the “three Vs” associated with big data — the other two being velocity (the need to move and process data faster) and variety (the need to process data from a vast array of sources and in multiple formats). These issues take on a special importance in finance. Organizations that handle financial data understandably attach especially high importance to the integrity and timeliness of their data. After all, corrupting a few digits in a transaction confirmation or payment instruction has consequences.

Institutional Investors and the Data Divide

The growing level of resources going into investment data and analytics is clearly necessary as companies seek to keep pace with data growth and market demands. The level of importance executives assign to it, however, points to implications far bigger. As our survey reveals, a digital divide has emerged in the investment industry. At one end of the spectrum are today’s “data leaders” — firms whose investment data and analytics capabilities are already a source of competitive advantage. At the other end are the “data laggards” — companies that risk falling behind because they struggle to harness this important resource (see next page).

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This report explores what this data divide means for the future of the industry. Part 1 considers in more detail the trends driving demands for innovation in data management and the readiness of asset managers and asset owners adjust to them. Part 2 examines where they need to invest to develop best practices and state-of-the art systems that can secure the rewards of data mastery.

How We Defined Data Leaders and Data Laggards

Throughout this report we will highlight the differences between data leaders and data laggards in our survey. Leaders are the 118 institutional investors — 29 percent of the sample — where respondents strongly agree that their investment data and analytics capabilities are a source of competitive advantage. Laggards are the 94 institutional investors — 23 percent of the sample — where respondents did not agree that their data and analytics are a source of competitive advantage. The remaining 48 percent only somewhat agree that their companies gain competitive advantage from their data and analytics capabilities.
Part 1: The Drivers of Change
A wide variety of industry trends are forcing institutional investors to change how they manage data — from increased regulation and more stringent risk management standards, to the increased volume and speed associated with electronic trading (see Figure 3). The breadth of these challenges illustrates how fundamental data and analytics have become across nearly all of an institutional investor’s core operations.

Risk and Performance in the Spotlight

The shocks to the global financial system of recent years have dramatically increased the focus of institutional investors on risk. As another recent Economist Intelligence Unit survey for State Street pertaining to risk showed, the number of such companies where risk is a top priority more than doubled between 2007 and 2013, and in Europe the number more than tripled (see Figure 4).
Risk management has a direct relevance for IT systems. Steve Vanourny, senior vice president and head of Analytics at State Street Global Exchange, believes, “Risk management is 70 percent data management.” Accordingly, in our survey, more stringent risk management standards top the factors most likely to change how companies manage investment data, and the improvement of risk tools is the most frequently-cited priority for data and analytics investments (cited by 34 percent). More generally, 63 percent expect to increase their investment in risk analytics over the next three years.

“The importance attached to your capabilities with regard to risk management has grown immensely, especially by institutional clients.”

– Michael Schmid, head of Risk at Raiffeisen Capital Management
This increased emphasis on data to help manage risk is playing out in a number of ways. “The importance attached to your capabilities with regard to risk management has grown immensely, especially by institutional clients,” notes Michael Schmid, head of Risk at Raiffeisen Capital Management. Investors want to know how well investment strategies conform to their risk-return objectives. This frequently involves very detailed risk and performance attribution across entire portfolios — including multiple asset classes — to enable a comprehensive assessment of overall exposure.

The ability to provide deeper insights into risk has become one of the main criteria that institutional investors use to evaluate and select asset managers. But today, many asset managers are dissatisfied with their risk data. As the Economist Intelligence Unit risk survey for State Street noted above revealed, only 29 percent of asset managers themselves think that they have very good internal risk information.4

Meeting investor demands in this area will force managers to become more flexible with their data. As Lee Kenyon, director of Data Governance at the asset management firm Eaton Vance Management, explains, “One client may wish to see data a certain way, whereas another may wish to see it a different way. The ability to provide [information] in a flexible manner to reporting teams is becoming more important.”

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4 The Economist Intelligence Unit, Closing the Communication Gap, 2013
Testing Risk Scenarios

Risk assessment approaches are changing for institutional investors in response to the limitations of traditional measures revealed by the financial crisis. Some of the more sophisticated approaches being applied now include scenario-based analysis and stress testing. “There is a big move towards their use,” says Robert Jarrow, Professor of Investment Management at Cornell University's Johnson Graduate School of Management. “Companies are definitely moving in this direction of their own volition, but the real impetus is coming from the regulators.” Given the impossibility of assessing sometimes tens of thousands of securities separately, Professor Jarrow expects that scenario and stress testing will increase the use of factor analysis — identifying a handful of key factors to assess the sensitivities of securities to them.

While these techniques create promising opportunities, Professor Jarrow says that they bring a range of enormous data challenges, even for companies with good IT systems. “It is a challenge for companies to get the data for scenario analysis — including macroeconomic indicators and security prices — that are needed to build robust models. It takes time, and third-party data vendors will be deeply involved in this process.”

More sophisticated risk management tools and the ability to tap the right data and skills are therefore becoming key capabilities for financial services companies. This is another area where data leaders outclass data laggards in our survey by a significant margin: 68 percent of leaders are very confident about being able to conduct scenario and stress testing on the investment portfolio, versus only 38 percent of the data laggards. This should come as no surprise. As Professor Jarrow explains, “Unless you have the relevant data to put into a model, it doesn’t work.”
The Shift to Multi-Asset Portfolios

In a historically low-rate environment, parts of the investment industry are attracted to more complicated, often riskier asset classes than they were traditionally. Insurers, to give one example, are going beyond government debt into multi-asset funds and alternative assets. In general, “More asset managers are running multi-asset class portfolios and asset owners are increasingly becoming multi-asset class asset managers,” explains Steve Vanourny.

One example of this is Royal County of Berkshire Pension Fund. “In addition to equities and bonds, our portfolio now includes private equity, commodities, real estate, distressed debts, mezzanine debts, credit opportunities and hedge fund type vehicles,” says Nick Greenwood, who manages the pension fund.

This growing range and complexity of investments makes detailed risk and performance data essential. “Once you're investing in a whole portfolio of exposures, the interplay of different risks and how they behave over time becomes of utmost importance,” says Michael Schmid. Classic risk management techniques simply do not work here, he adds.

For some asset classes, however, it is almost impossible to get the kind of risk and performance data that managers and owners demand. Returns data on private equity is very hard to obtain, while for hedge funds a lot of the data is proprietary. These issues make these relatively new asset classes harder to analyze.

Another challenge is that there are far fewer IT tools for managing these new asset classes — especially if you want to build a coherent view of risk and performance across the whole portfolio. “There is a wide choice of off-the-shelf tools available in the market for managing risk on equity and fixed income. But when you enter the world of alternatives and start to diversify into a multi-asset portfolio, there's much less choice,” says Philippe d’Orgeval, global head of Risk Management at AXA Investment Managers.

As a result of such difficulties, many asset owners still feel short of where they want to be. According to our survey, only 28 percent of pension funds and just 17 percent of insurance companies are confident in their ability to use their data to assess the performance of alternatives managers. And just 30 percent of asset owners overall are very confident in their ability to use data to evaluate risk exposures across their entire portfolio. With little choice but to shift into less-familiar asset classes with very different risk profiles, successful companies will be those that can build a holistic view of risk across the portfolio.
Leaders Versus Laggards on Multi-Asset Class Capabilities

Data leaders show greater confidence in managing and investing in new asset classes:

- Leaders are much more likely to see multi-asset class performance tools (87 percent compared with 70 percent for laggards) and multi-asset class risk tools (59 percent to 38 percent) as strengths.
- Leaders among asset owners also feel more secure when looking at the performance of alternative assets. When asked about confidence in their institution’s data capabilities for assessing the performance of traditional asset managers, 73 percent of leaders and 67 percent of laggards say that they are confident or very confident. However, when asked the same question regarding alternative asset managers, leaders still feel positive (73 percent are confident or very confident), but laggards are much less so (40 percent).

Custom Benchmarks

Before the financial crisis, the most important factor in asset manager selection was usually an ability to outperform traditional benchmarks. While this remains important, other criteria have become integral to the process, such as staying within a risk budget, maintaining funding status, or sustaining downside protection.

Accordingly, insurance companies and pension funds are increasingly looking for custom benchmarks that suit their investment philosophies and guidelines. This, however, is an area of weakness: just 22 percent of respondents to our survey think their benchmark data represents a significant strength. “There’s a clear need for custom indices and benchmarks that can be tuned to a specific investment strategy,” says Ivan Matviak, senior vice president and head of Software Solutions at State Street Global Exchange. As a result, 70 percent of those surveyed say that they plan to invest further in benchmark data in the next three years.

Looking further ahead, the need for more customized benchmarks and indices is likely to drive innovation among data vendors and service providers. For example, there is an opportunity to aggregate data at an industry level to enable broader benchmarking between a company and its peers, as Carol Ryan, senior vice president and head of Information Solutions at State Street Global Exchange, explains: “We know asset managers who want to understand how their factor exposure compares with that of their peer group. But you can only make those types of comparisons if you can aggregate industry-wide data, which is something we have the potential to do going forward.”

Another area driving demand for custom benchmarks and indexes is the desire among institutional investors to create better yardsticks for performance across more exotic asset classes. For example, State Street developed the first index that uses real-world data on private equity firms’ performance to develop a more robust benchmark for that particular sector.
Regulatory Compliance

A wave of regulation is placing major strains on institutional investors’ IT infrastructures. Dodd-Frank, Solvency II, Basel III, Undertakings for Collective Investment in Transferable Securities IV (UCITS IV) and the upcoming UCITS V, Foreign Account Tax Compliance Act (FATCA), CPO-PQR, Institutions for Occupational Retirement Provision (IORP II) and European Market Infrastructure Regulation (EMIR) are only some of the most prominent. Each regulation affects industry players in different ways and in different regions. Post-crisis regulations are also extending throughout the industry, in particular in the area of alternatives. Europe’s Alternative Investment Fund Managers Directive (AIFMD), for example, regulates private equity funds, commodity funds, real estate funds and hedge funds.

Many of these regulatory initiatives are designed to give officials a coherent view of risk across all types of securities at the level of entire countries or regions. In their attempts to achieve this goal, regulators are forcing institutional investors to collect more data — from both within and outside the firm. Once that data is collected, the analysis and reporting required can also be formidable complex. Basel III, for example, has more than 70 calculus equations for determining whether a company is compliant with given requirements.\(^5\) Previously, UK firms had to submit nine returns with 2,000 data fields. Now, under the European Banking Authority Common Reporting mandate (COREP), which came into effect at the beginning of 2013, they must send in 20 returns with 20,000 data fields.\(^6\)

Addressing these complex demands simultaneously across multiple regulatory jurisdictions has become a strategic challenge for institutional investors. “A chief investment officer previously could just focus on returns and performance, but now they have to focus on risk, compliance and regulatory reporting,” explains Jessica Donohue, senior managing director and head of Research and Advisory Services at State Street Global Exchange.

Most asset owners and managers are investing in technology to achieve compliance, but some are making more progress than others. This is one of the most striking areas of difference between our survey’s data leaders and laggards. Forty-two percent of the former call their tools for regulatory compliance a significant strength, versus just 26 percent of data laggards. Such heightened effectiveness makes the leaders much better equipped to cope in a rapidly evolving regulatory environment.

Electronic Trading and Advances in Analytics

The growth of electronic and high-frequency trading are two more trends with far-reaching implications for data strategies.

Already 75 percent of cash equities and 60 percent of foreign exchange spot market transactions are electronic, as are a growing percentage of government and corporate bonds (see Figure 5). This has allowed new trading strategies to emerge where algorithms orchestrate millions of micro-trades. As of August 2012, 73 percent of all equity orders (by volume) in the US, and 40 percent in Europe went through high-frequency trading firms. Electronic and high-frequency trading have led to a rapid upsurge in market activity and volatility, and an explosion of trading-related data.

Many in the industry are trying to catch up to the shift to electronic trading, says Martine Bond, senior vice president and head of Trading and Clearing at State Street Global Exchange. Only 20 percent of respondents in our survey have high confidence in their ability to optimize electronic trading strategies. “Trading platforms have to adapt to support a new paradigm that runs on complex technology — technology that exists within a new risk and compliance framework,” Bond explains. “More traditional traders are in the process of re-engineering their

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7 “Regulators globally seek to curb supercomputer trading glitches,” Reuters, August 31, 2012.
business models to compete with institutions born out of electronification that are already executing in this space with clarity and precision.

Meanwhile, the growing use of analytics tools in different parts of financial services suggests that they can bring strong competitive advantages to those able to use data effectively. It is clear, however, that most institutional investors in our survey are not confident that they have the ability to extract insight from their data. At best this is an opportunity missed; at worst it could lead to organizational failures. As Jessica Donohue explains: “Data without the ability to deploy it to solve a problem or identify an opportunity — that’s just noise.”

A World of Complexity

The trends described above make excellence in data management an important competitive advantage for institutional investors. Those who excel in this field will thrive, but those who are merely competent will quickly fall behind. The next section discusses in more detail the characteristics and strategies that will separate the data leaders of the future from their less-capable peers.

Data — A Global Challenge With Regional Implications

Our research reveals a strong consensus between institutional investors around the world, in terms of general perceptions of the main data challenges and priorities for the future. However, the survey does highlight some interesting differences in emphasis between the regions in their approach to data and analytics.

Generally institutional investors based in North America are more likely than their peers to view data and analytics as both a strategic priority and source of competitive advantage. For example, 44 percent of North Americans cite data and analytics as their single most important strategic priority, whereas 37 percent of Europeans and 31 percent of Asian companies do so. Similarly, the North Americans are the biggest believers in the power of data: three quarters of them said that data and analytics capabilities will be among the most important competitive advantages that investment firms will have in the future, versus 66 percent in Europe and 58 percent in Asia Pacific.

The more institutional investors believe that data can provide a competitive edge, the more likely they are to invest in this area. Most respondents in the survey plan to spend more on data and analytics over the next three years, but North Americans are particularly bullish in this regard (90 percent of North Americans said they would increase investment, versus 84 percent of executives who did so from Asia Pacific and North Europe). That said, there is broad consensus on where investment will be prioritized, with OMS/EMS tools emerging as the fastest-growing area for executives in all regions.
There are some interesting variations in the way respondents from different regions view their key strengths in data management. Overall, North Americans are more likely to feel that they are already obtaining a competitive advantage from their data than their peers in Europe and Asia Pacific, and they lead the pack along with the Europeans when it comes to generating forward-looking insights from their data.

In some other specific areas, however, executives in the other regions were more confident. For example, institutional investors from Asia Pacific were more likely to be confident in their regulatory tools (43 percent of Asia Pacific respondents cited this as a strength in the survey, versus only 31 percent for North America and 32 percent for Europe). Asia Pacific respondents were also more likely to have confidence in their electronic trading systems than the North Americans and Europeans.

Generally these regional comparisons represent differences of degree, rather than substance. But local context matters. In Asia, institutional investors are generally less established but faster growing than their Western peers. Not surprisingly, they tend to emphasize the challenges created by rapid expansion. For example, Asia Pacific executives believe that the top priority for their data and analytics strategy in the next few years is to develop systems that are flexible enough to grow with the business, whereas their counterparts in Europe and North America are more focused on systems to manage risk and regulation.

Geography colors the way executives plan their data and analytics strategies, but the general trend towards a greater focus on investment data resonates strongly around the world.
Part 2: Becoming a Data Leader
A broad comparison between leaders and laggards reveals how data capabilities have become a key competitive weapon (see Figure 6). Data leaders attach more importance to data and analytics, and their investment in this area is rewarded by the ability to derive more insight and value from their internal and external data.

This digital divide matters all the more because data has a vital role to play in enabling institutional investors to address so many of their key strategic challenges. Data leaders are more equipped to manage risk and performance across today’s complex, multi-asset class investment portfolios. They are more likely to have the infrastructure and reporting tools to keep pace with evolving regulatory demands across different international jurisdictions.

**Forward-Looking Insights**

According to our survey, data leaders also have a powerful advantage when it comes to making investment decisions. They can transform big data into “smart data.” For example, 70 percent of data leaders express a high degree of confidence that they can generate forward-looking insights from their data, compared with only 43 percent of data laggards. They can also act
faster than their peers to seize opportunities because they are more likely to have optimized their electronic trading capabilities.

Meanwhile, the data laggards in our survey suffer a deficit in terms of many important capabilities. They also pay a substantial penalty by having to invest more time in managing data. In one of the most striking gaps in the survey, 33 percent of data laggards admit that the complexity of managing data distracts employees from core focus areas. Only 7 percent of data leaders say they suffer from the same problem.

Figure 6: Measuring up: Data leaders versus data laggards

DATA LEADERS ARE BETTER AT...

**EXTRACTING INSIGHT FROM DATA**
- % confident in capability
  - Leaders: 75%
  - Laggards: 50%
  - Extracting investable insights from a large volume of data
  - 75% in Leaders, 50% in Laggards

**MANAGING RISK & PERFORMANCE**
- % confident in capability
  - Leaders: 72%
  - Laggards: 50%
  - Integrating our performance analytics with our risk analytics
  - 72% in Leaders, 50% in Laggards

**ELECTRONIC TRADING**
- % confident in capability
  - Leaders: 65%
  - Laggards: 53%
  - Optimizing our electronic trading strategies
  - 65% in Leaders, 53% in Laggards

**PREPARING FOR CHANGE**
- % agree with statement
  - Leaders: 92%
  - Laggards: 50%
  - Investment data & analytics are keeping pace with the growth of the business
  - 92% in Leaders, 50% in Laggards

- % agree with statement
  - Leaders: 7%
  - Laggards: 33%
  - The complexity of managing our data issues distracts employees from core focus
  - 7% in Leaders, 33% in Laggards

Source: State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit
No one would claim that the leaders in the survey have mastered every single data challenge, or perfected their technology infrastructures. Indeed, data leaders are more likely to be investing at higher levels than their peers, precisely because they know how important it is to keep improving their capabilities in this area. But it’s clear that they are already deriving a substantial advantage over the data laggards. Their strategy to invest and optimize their data marks them out as organizations that have what it takes to thrive in a challenging investment climate.

**Achieving a Data Advantage**

Given the many advantages that accrue to data leaders, three important questions arise about how data will contribute to shaping the future of the investment industry:

- How do institutional investors’ data infrastructures measure up to the challenges identified by executives in this research — and where is the greatest need for improvement?
- Where will the top institutional investors invest in improved tools and capabilities over the coming years?
- What will it take to become a data leader of the future — a company that fully capitalizes on its data assets to achieve a lasting competitive advantage?

**Where is the Greatest Need for Improvement?**

Our survey asked respondents to rate the most pressing data and analytics challenges in their business (see Figure 7). A trio of issues emerged as key concerns for the industry. Foremost among these is accuracy of data (37 percent), followed closely by the lack of integration between different data sources and types, and timeliness of data.
Figure 7: What do you consider to be the top challenges related to investment data and analytics overall for your business today?

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Proportion of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of data</td>
<td>37%</td>
</tr>
<tr>
<td>Timeliness of data</td>
<td>34%</td>
</tr>
<tr>
<td>Lack of integration between different data sources and types</td>
<td>34%</td>
</tr>
<tr>
<td>Ability to customize data to suit different end user needs</td>
<td>31%</td>
</tr>
<tr>
<td>Ability to extract broader themes and forward-looking insights from data</td>
<td>29%</td>
</tr>
<tr>
<td>Increased volume of data</td>
<td>29%</td>
</tr>
</tbody>
</table>

Note: Respondents could select up to two answers
Source: State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit

Clearly data needs to be accurate — but it also needs to be the right data, in the right format, over the right time periods, sourced from the right places. This is especially important in the investment industry where, as was noted earlier in the report, data integrity comes at a premium. “You could have the best tool in the world, but unless you get the right type of data and information … there is no testing you can run that will give you an accurate reflection,” says Joe Carrubba, a principal at Boston Consulting Group.

**Barriers to Integration**

Integrating this data is also a major challenge. Getting this right is key to enabling data to flow seamlessly across the entire investment value chain, including pre-trade analysis, portfolio analysis, risk management, trading, performance attribution, compliance and reporting. But most organizations struggle to overcome the barriers to integration, particularly in areas such as external performance and risk analytics (see Figure 8). One reason for this is that many institutional investors are using “point solutions” — for example, software tools that only support a particular investment class, such as fixed income or equities. These applications were never
designed to connect together, making it extremely difficult for investment managers to develop a coherent picture of today’s complex investment portfolios.

“Even when clients buy best-of-breed tools, these tools aren’t necessarily made to talk to one another,” says Ivan Matviak. “So they’re having to integrate different data sources or different ways of analyzing data. That kind of inconsistency creates problems for them to get a holistic view of their holdings, conduct robust analytics or provide comprehensive reporting.” Moreover, the challenge goes beyond integrating databases or applications, since often you need to reorganize data sources so that they can fully knit together. “Creating the database requires a lot of filtering, cleaning and organizing so that it can be accessed and used for different purposes,” comments Professor Jarrow.

Proprietary Data Streams

The integration task is hard enough with internal applications and databases; when you add external data sources into the mix, the task becomes hugely complex. Many institutional investors buy hundreds of data streams from multiple vendors, and integrating these in a consistent data repository (such as an enterprise data warehouse) is a major headache for organizations. “The data mapping and transformation required to bring these data streams into their systems in a format that is useable is a significant effort and undertaking,” comments Carol Ryan. On top of the technical issues this raises, there are also all the contractual and legal issues involved with proprietary data streams, such as those arising from usage rights. “It’s not where firms want to spend their time when they could be managing their investments,” Ryan adds.

“Even when clients buy best-of-breed tools, these tools aren’t necessarily made to talk to one another.”

– Ivan Matviak
Overcoming these interconnected data challenges is critical to creating more advanced and scalable data systems and processes that are able to keep pace with the growth of the business. Doing so is difficult, but not impossible. “To have an integrated view of your risks and performance, there has to be a system that integrates across the divisions within your company,” says Professor Jarrow. “That is a difficult problem, however. There are third-party vendors out there who have spent significant resources figuring out how to do it. It’s not easy, but the good news is, it’s doable.”
Investing in Data Excellence

Institutional investors are responding to these challenges by investing heavily in data and analytics. Eighty-six percent of respondents have increased their investment in data and analytics infrastructure in the past three years. Most of these companies are increasing investment by up to 20 percent, but 11 percent are ramping up investment even more aggressively (see Figure 9).

Where is this investment being targeted? As can be seen in Figure 10, investment will increase (often substantially) across several different technologies. However, tools to support the front office stand out as a priority: 67 percent plan to invest in integrated electronic trading tools, while 86 percent plan to invest in order management and execution management systems (OMS/EMS). Portfolio optimization also features as an important area for spending. Investment in this area will increase as institutional investors race to keep pace with the increase in electronic trading, and the related need to be able to act on investment opportunities faster and more efficiently.
Figure 10: Over the next three years, what changes do you expect to the level of investment your institution makes in the following types of technology or data?

<table>
<thead>
<tr>
<th>Type of Technology/Data</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order management/execution management systems (OMS/EMS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Portfolio modeling/optimization system</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance analytics</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Benchmark data</td>
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<td></td>
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<td></td>
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<tr>
<td>Electronic trading system</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk analytics</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit

Gaining an Edge: Five Steps to Becoming a Data Leader

Given that institutional investors are ramping up their investments into data and analytics, what does a state-of-the-art technology infrastructure need to deliver?

The capabilities and strategies put in place today will lead to data systems that need to serve the business for many years to come. With technological developments moving so fast, getting these decisions right is critical as major changes are almost always expensive and difficult to reverse.

Clearly, the right choice of data strategy is influenced by each organization's unique objectives. While many of the issues are the same for both asset owners and managers, there are key differences. Insurance companies and pension funds, for example, are looking for analytical tools that help them link assets and liabilities. Asset owners who outsource investment management also look for solutions that help them assess the performance of fund managers — for example, manager benchmarking and improved performance attribution. The same group is in need of greater transparency into alternative assets, particularly private equity and hedge funds.
Despite these important variations, overall there is broad agreement about the key steps institutional investors need to take to build the data infrastructures of the future (see Figure 11).

Figure 11: What are the top priorities for your investment data and analytics strategy over the next three years?

<table>
<thead>
<tr>
<th>Priority</th>
<th>Proportion of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved risk tools with multi-asset class capabilities</td>
<td>34%</td>
</tr>
<tr>
<td>Better tools to manage regulation in multiple jurisdictions</td>
<td>34%</td>
</tr>
<tr>
<td>More flexible or modular tools that will grow with the business</td>
<td>34%</td>
</tr>
<tr>
<td>Improved ability to manage and extract insight from multiple data sources</td>
<td>34%</td>
</tr>
<tr>
<td>Better integrated electronic trading platforms</td>
<td>30%</td>
</tr>
<tr>
<td>More intuitive user tools/interfaces</td>
<td>26%</td>
</tr>
</tbody>
</table>

Source: State Street 2013 Data and Analytics Survey conducted by the Economist Intelligence Unit

1. IMPROVE YOUR RISK TOOLS WITH MULTI-ASSET CLASS CAPABILITIES

In the wake of persistently volatile markets, it makes sense that institutional investors are prioritizing new risk tools. As Ivan Matviak explains: “Companies need better, more real-time access to their trade positions, pricing information and corporate actions information because part of the challenge with volatility is dealing with it quickly enough.”

Market volatility and poor returns have led directly to an increase in the popularity of multi-asset class strategies — which are notoriously hard to analyze from a risk perspective. Risk transparency, profiling and reporting are more important than ever before, with all stakeholders raising the bar on what is required. Risk solutions increasingly need to provide a holistic view of risk across multi-asset portfolios and provide near real-time insights into trade positions at any one time. Since risk and performance work hand in hand, data leaders are also seeking better integration between their risk and performance analytics.
RELEVANT STRATEGIES:

• Integrated risk and performance analytics
• Risk and analytic tools that have multi-asset class capabilities
• More holistic, flexible and more actionable risk tools
• Factor-based risk systems

2. DEVELOP BETTER TOOLS TO MANAGE REGULATION IN MULTIPLE JURISDICTIONS

Regulations have become more stringent in recent years, as outlined in Part 1. Much of the challenge with meeting requirements comes down to data. Companies need systems that integrate regulatory restrictions into investment, risk and trading platforms. Since regulators are forcing institutional investors to collect new types of data, organizations need to develop the right data governance strategies to make sure that this data is captured and integrated in the right way. Reporting requirements also vary hugely, so the real challenge is slicing and dicing data in many different ways to meet stakeholder demands. Above all, regulatory tools need to deliver the flexibility required to address compliance and reporting needs across multiple jurisdictions.

RELEVANT STRATEGIES:

• Systems that are supported by up-to-date regulatory expertise
• Systems that include rule-sets to help manage compliance requirements
• Customizable reporting tools integrated with the necessary databases

3. IMPROVE THE ABILITY TO MANAGE AND EXTRACT INSIGHT FROM MULTIPLE DATA SOURCES

Integration issues are often the key barrier to preventing institutional investors from achieving their goals with data. They are also one of the biggest frustrations with traditional vendor solutions.
One solution is to bring your data into an enterprise data warehouse — essentially a repository where data is stored in a way that makes it more accessible and easier to analyze across the enterprise. Many are following this strategy. For example, Aaron Drew, head of Macro Strategy at New Zealand Superannuation Fund, says, “We have been trying to create a central repository of all our different data-sets and portfolio holdings that everyone can get access to.” In addition to investing in these kinds of data repositories, institutional investors also need the right data governance processes to make sure that data integrity is preserved as information travels through the organization.

**RELEVANT STRATEGIES:**

- Creating data warehouses to integrate multiple databases and sources into a “single version of the truth”
- Using advanced analytics to find new ways to extract insight from overwhelming amounts of data
- Developing efficient processes to capture, clean and transform data, together with the right governance model to assure data integrity

4. **OPTIMIZE YOUR ELECTRONIC TRADING PLATFORMS**

In a fast-changing investment environment, the ability to act on investment strategies and insights rapidly is also a key consideration for the overall IT architecture. In this context, it is not surprising to see investment in OMS/EMS as a top priority. The goal going forward is to integrate trading solutions to support near real-time decision-making across multiple asset classes, as well as capitalizing on trading opportunities and minimizing costs.

**RELEVANT STRATEGIES:**

- Better integrated electronic trading platforms
- Need for integrated OMS/EMS and multi-asset class trading platforms
- Need for products/services that can support trading and clearing needs with regulatory changes
5. DEVELOP A SCALABLE DATA ARCHITECTURE THAT WILL GROW WITH YOUR BUSINESS

Institutional investors need a flexible data infrastructure that can keep pace with evolving client needs and new regulations. This is what makes modular solutions that grow with the business so attractive. Asset managers and owners also need flexibility to manage new asset classes, complex mandates and offshore assets.

RELEVANT STRATEGIES:

- Technology with scalability to handle growth and diversification
- Systems that support global reporting
- Support for rapid product innovation

Choosing the Right Service Model

There is more to the challenge of managing data than investing in technology alone. Even the best tools and most tightly integrated infrastructures can only generate value if organizations have the talent, know-how and resources to put their data to work.

Institutional investors have built up considerable skills in this area. Even so, only 14 percent of respondents in our survey believe they have the right talent to advance their investment data and analytics strategy.

The range of skills and competencies required are wide-ranging:

- **Data strategy.** Institutional investors need to develop the data strategy and governance model that will deliver the capabilities required to compete. Many will want expert advice to make sure their plan matches their objectives.

- **Capitalizing on external data.** There's a vast world of data available outside the organization. Large investment funds will take hundreds of data products and feeds from multiple providers. The effort involved in aggregating and normalizing that data places a huge burden on internal resources, making it an area ripe for outsourcing.

- **Building the platform.** Institutional investors face a huge task when it comes to developing a data infrastructure that is capable of addressing the evolving challenges detailed in this report. Whether they choose to create custom solutions or integrate best-of-breed technologies, the choices they make today will define their capabilities for many years to come. Developing the right data architecture is another area where external support and expertise will be heavily sought.
• **Data management and reporting.** Regulators and investors are demanding much more data transparency and sophisticated reporting. Keeping pace with the demands of multiple regulations across a global footprint entails a huge administrative overhead that many institutional investors will need help with.

• **Portfolio optimization.** The ability to use data-driven insights to optimize investment strategies and portfolios is already a core competency for most institutional investors. However, there are innovative ways to use big data to spot new opportunities, or to analyze risk in more sophisticated ways. Data leaders will continue to build and strengthen their intellectual capital in this space.

Given the scale of the challenges above, it can benefit institutional investors to outsource or add to their expertise in at least some of these areas. For some, the cost and complexity of trying to build and maintain every aspect of their data infrastructures in-house will become prohibitive. There’s also a shift away from institutional investors implementing point solutions that are difficult to integrate. In their place, a managed service model is emerging, where technology is combined with support services and expert data management.

There’s also an emerging opportunity to tap into industry data at an aggregate level. For example, data aggregators are beginning to enable institutional investors to evaluate their portfolios against their peer group. These types of solutions are still in their infancy, but as data demands become more ambitious, it is an area where we can expect to see more innovation.
Conclusion:
From Big Data to Smart Data
Our research reveals just how integral data and analytics capabilities have become for institutional investors in relation to almost all of their strategic goals. It’s not a surprise that so many executives in our survey agree that data is now a key source of competitive advantage.

This is not a theoretical discussion about data solutions that might evolve in the future. As our research shows, a clear distinction is already forming in the industry. Data leaders are harnessing the power of data for competitive advantage, while data laggards are being held back by their shortcomings.

The data leaders are clearly better able to manage, process and extract insight from data. This enables them to make superior investment decisions, control risk across complex portfolios, analyze performance and develop valuable insights. Data leaders also have faster, streamlined trading processes. They have flexible tools and data infrastructures that can support a full range of asset classes. And where opportunities arise in other countries, data leaders are able to expand efficiently, leveraging their flexible data capabilities to adapt to new markets.
Importantly, data leaders don’t do everything themselves. They must make the right decisions about what to outsource and what their own strengths are. They also understand that mastering data is about having the right talent — and ultimately the right culture — to manage this vital asset effectively.

**Defining the Future Industry Leaders**

Becoming a data leader is not easy. Nor is there room for complacency. The pace of technological change combined with the disruptive industry trends described in this report mean that organizations must continue to invest to retain a data advantage. But in a world where strategic investment opportunities are harder to identify, more fleeting and more complex to execute upon, institutional investors that can extract deep insights from data will have a huge advantage. This ability to transform big data into smart data will increasingly define our future industry leaders.
Contact Information

If you have questions regarding State Street’s solutions and capabilities please e-mail contactssgx@statestreet.com.