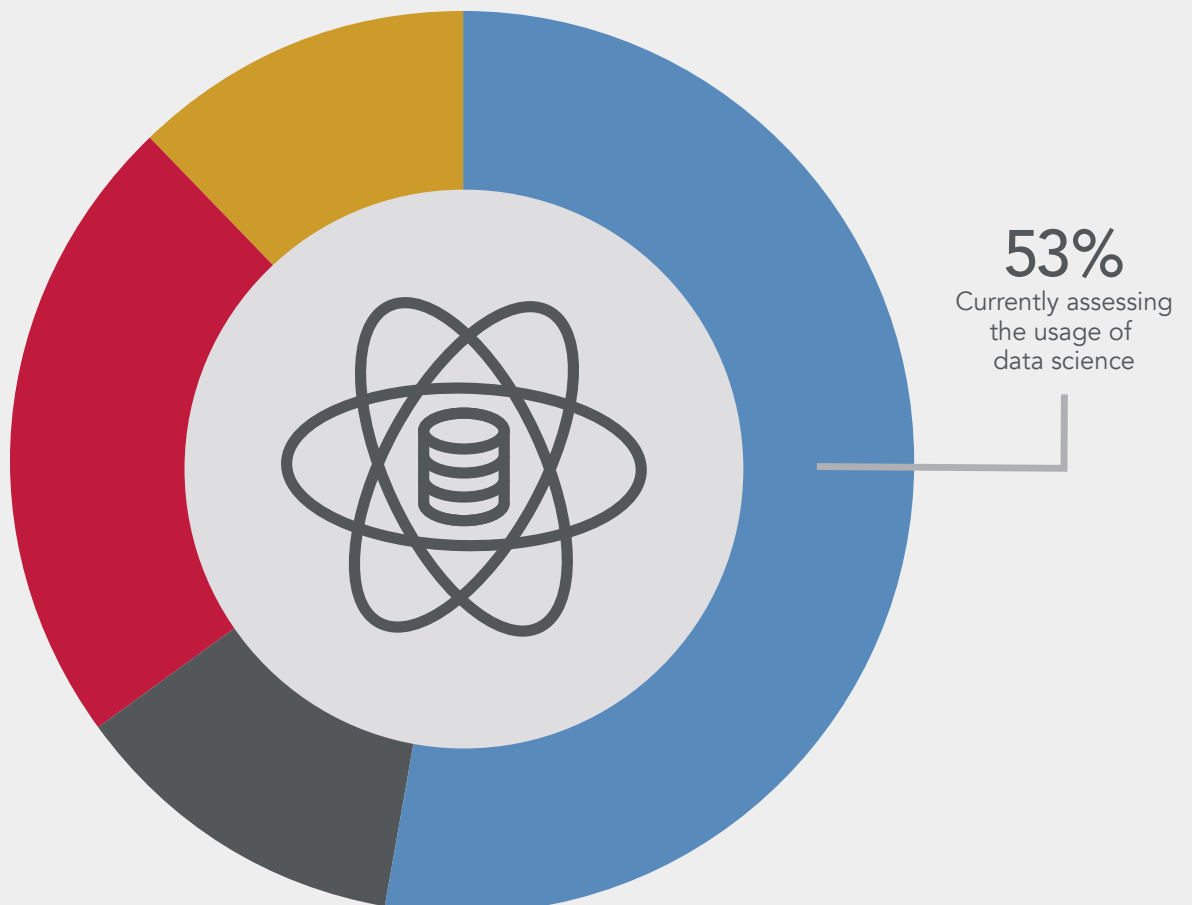


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ADOPTION OF DATA SCIENCE IN FINANCE

Quantifi Survey





Message from the CEO

On behalf of everyone at Quantifi, I hope you and your families are well during these unprecedented times. Our primary focus has been the safety and wellbeing of our employees and ensuring our clients are supported. We already had a strong culture of flexible and remote working which in this new environment has helped our people navigate a work-life balance. Providing excellent service is a key priority and we have worked hard to prevent any disruption that the virus may have on our operations so we can continue delivering the same high-quality service our clients expect from us.

Recent events around Black Lives Matter have highlighted issues that Quantifi takes very seriously. As an organisation, Quantifi stands with everyone who acts for positive change and we do not tolerate harassment, discrimination or offensive behaviour. While tragic, recent events have provided a unique opportunity to enact change. Reflecting this, we have made concrete improvements across our internal communication, recruiting practices, and corporate citizenship to better support diversity and support the causes our employees feel passionate about.

The depth and breadth of the COVID-19 crisis is on an order not seen since post-financial crisis liquidity regulations were first implemented. As a result, firms have been challenged in their ability to manage and report on their liquidity positions and funding capabilities. The feature story in this newsletter explores the importance of managing liquidity risk in times of stress.

Aside from businesses, the COVID-19 pandemic and concepts like “flattening the curve” and R-naught, have brought next generation technology applications, like data science, to the forefront of our lives. Applications that are designed to collect and cleanse data, pipe it through models and visualize model outputs are all powered by data science tools. This issue includes two articles on data science. The first highlights use cases for data science, and the cover story shares results from a recent survey on the adoption of data science in finance.

The team at Quantifi has been working very hard to ensure our clients are well supported and I have received lots of positive feedback about the work they have been doing. I wanted to join our clients in saying thanks for all the great work under difficult circumstances.

A handwritten signature in black ink, appearing to read 'Rohan Douglas', written in a cursive, flowing style.

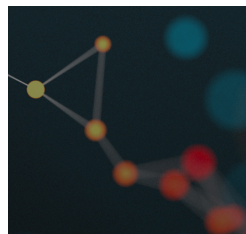
Rohan Douglas, CEO, Quantifi

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Quantifi Releases 50 New Features & Enhancements

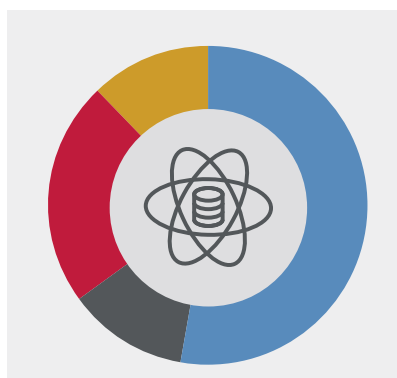
The broad range of features include expanded asset coverage, performance improvements & support for the IBOR transition.



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Data Science Use Cases in the Financial Markets

What are the key trends shaping data science practices within a trading and risk management context?



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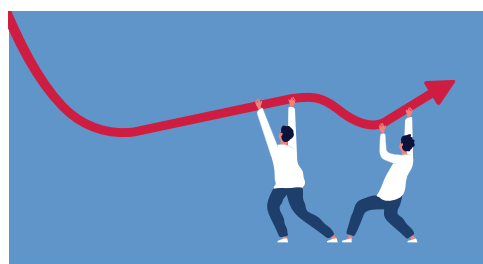
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The deployment of data science techniques provides an opportunity for firms to stand out from the competition and reinvent their business.

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Managing Liquidity Risk in Times of Stress

The COVID-19 pandemic has once again highlighted the salient significance of liquidity risk management.



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Quantifi Wins FinTech Breakthrough Award

Quantifi has been recognised as Best Risk Management Platform at the FinTech Breakthrough Awards.



Quantifi Named Leading FinTech Company in WealthTech100 Awards

WealthTech100 is an annual list of the most influential companies transforming the wealth and asset management industries produced by FinTech Global. The report is built using detailed analysis of factors such as technology innovation, company growth and the ability to generate cost savings for clients.



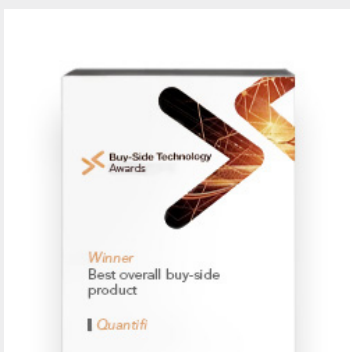
Haven Cove Selects Quantifi To Scale For Growth

"Given our plans for future growth, we were looking for a forward-thinking technology provider with a strong reputation in the fixed income and credit markets. We chose Quantifi because it was the only company that could provide the level of sophistication we required." Nick Greenwood, Portfolio Manager, Haven Cove.



Quantifi Wins FinTech Breakthrough Award for Best Risk Management Platform

Quantifi has been recognised as Best Risk Management Platform at the FinTech Breakthrough Awards. These annual awards recognise the most innovative companies across the FinTech industry. Quantifi's forward-thinking approach and pace of innovation provides clients with the latest innovations and gives them considerable competitive advantage.



Quantifi Wins Three Awards at the Waters Buy-Side Technology Awards

"Investment managers require solutions that can support their evolving risk management needs and can scale to support future growth. Winning three awards in highly competitive categories demonstrates the commitment we have made to our clients to provide innovative and transformative technology, underpinned by our ongoing investment in R&D." Rohan Douglas, CEO, Quantifi.

QUANTIFI RELEASES 50 NEW FEATURES & ENHANCEMENTS

As part of an ongoing commitment to reinvest in its solutions, Quantifi has introduced over 50 new features and enhancements to support the latest industry initiatives. The broad range of features include expanded asset coverage, performance improvements and support for the IBOR transition.

One of the primary forces driving capital markets is new technology. By leveraging emerging technologies like microservices, AI, cloud and data science, firms can reduce operating costs and better meet the needs of investors, stakeholders and regulators. The new features and functionality introduced by Quantifi provide clients with advantages in terms of performance, scalability, flexibility and usability.

"As firms navigate fundamental market transition efforts such as IBOR, the ability to improve business-as-usual efficiencies and operational costs will need to be aligned with an ability to keep pace with technology-enabled innovations that can sharpen analytical prowess and operational agility," comments Cubillas Ding, Research Director at Celent.

"Market participants face significant pressures to comply with more stringent risk and capital requirements while maintaining acceptable levels of profitability. Consequently, firms now increasingly view risk technology as a strategic asset and are prioritising their investment in this area," comments Rohan Douglas, CEO, Quantifi. "Our new features provide clients with rich, flexible and easy-to-integrate functionality to help make efficient investment decisions, reduce risk and take advantage of market opportunities. As always, this release is driven by working closely with clients, market experts, and industry participants," continues Rohan.

FEATURES & ENHANCEMENTS INCLUDE:

Cross-Asset Coverage

- Improved support for more complex fixed income products (fixed to floating, perpetuals, hybrids, global emerging markets)
- Expanded asset coverage including additional support for complex equity derivatives and ETFs

Analytics, Risk & Reporting

- Built-in support for new global market conventions under IBOR transition
- Expanded VaR functionality to include more complex structured products
- Unique and flexible grouping of positions simplifies reporting and limit management

Architecture & Performance

- Enhanced cross-platform support of analytics on Linux, MacOS and Windows
- Unique and intuitive interface with Python simplifies usage
- A range of significant performance improvements across the product suite

DATA SCIENCE USE CASES IN THE FINANCIAL MARKETS

Data science applications are used across multiple industries. Obvious power users are high-tech web-based firms like Google, Netflix, Uber and Amazon. Brick-and-mortar industries like big pharma and logistics firms are also heavy users.

Aside from businesses, the COVID-19 pandemic and concepts like “flattening the curve” and R-naught have suddenly, and tragically, brought data science applications to the forefront of our lives. Applications that are designed to collect and cleanse data, pipe it through models and visualise model outputs are all powered by data science

tools. For example, Palantir, a data firm, is helping the NHS in the UK cleanse its data and merge it with other datasets to help plan the response to the pandemic. Similarly, the John Hopkins Dashboard, which delivers up-to-date information in real time, is powered by Solace, an event streaming and management platform. Likewise, the predictions that are constantly being discussed in the news are powered by forecasting models from MIT, IHME, Columbia and a few others.

The following table outlines a number of use cases across markets and trading, banking, investment management and non-financial risk activities that can benefit from the use of some of these environments.

Market Risk & Trading	Investment Portfolio Design & Modelling	Banking Book Financial Risk	Non-Financial Risk & Compliance
<ul style="list-style-type: none"> • Product structuring & testing • Hedge design, construction & testing • Testing of algo trading strategies 	<ul style="list-style-type: none"> • Portfolio construction & optimisation • Quantitative research & investment modelling 	<ul style="list-style-type: none"> • Balance sheet forecasting • Enterprise stress test production (e.g. CCAR) • Credit provisions modelling (e.g. CECL, IFRS9) 	<ul style="list-style-type: none"> • KYC, AML and fraud detection & investigations • Operational risk assessment & monitoring • Regulatory reporting & submissions

In the finance and banking industry, there has been adoption on the core banking side - for example, to model customer behaviour, assess credit for borrowers, etc. Within capital markets, and specifically in risk management, some of the big banks have invested heavily over the past few years to build their own proprietary platforms. Tier 2 and Tier 3 banks, along with smaller buy-side institutions, are primarily where we see an opportunity for third party solutions.

A data science powered risk analytics platform for these firms would have three different components.

Data	Analysis	BI/Visualisation
<ul style="list-style-type: none"> • Integrated security master, portfolio, risk & financial data • Data management - on-demand normalisation & curation 	<ul style="list-style-type: none"> • Cross-asset model libraries • AI & machine learning 	<ul style="list-style-type: none"> • Power BI, Tableau, etc.

The first is the data component, which includes integrated security master, portfolio risk and financial data. On the data management side, this would involve on-demand normalisation and curation of the data. Data no longer resides in a database somewhere. It is streaming over the cloud and needs to be normalised in real time. Secondly, the analysis component includes cross-asset financial model libraries as well as AI and machine learning tools. The final component is BI and visualisation, which includes third-party tools such as Power BI and Tableau.

All of this needs to be implemented in a development environment or a platform that provides a fast cycle of model development, from experimentation to production, while also enforcing a strong governance structure. This eliminates the fragmentation of production system versus analysis system, which is used by traders, analysts and quants - typically in Excel workbooks - across the organisation. It also facilitates the ability to combine internal data sets with external structured and unstructured data sets and the agility required for experimentation within a production environment.

There are a number of open source tools, as well as third-party applications, available in the market that are designed to support the data science process:

- **Ingesting Data** - Files, Data Feeds, SQL, HDFS and Kafka
- **Wrangling Data** - Refine and Python
- **Modelling** - Python, Jupiter, R, RStudio, VS Code along with the Financial & Risk Model Libraries that that will be required
- **Testing** - DataOps
- **Publishing** - Python, Dash or third-party applications like Power BI and Tableau

How is Quantifi Leveraging Data Science?

Quantifi has stayed ahead of the competition by continuing to make smart investments in emerging technologies and next-generation approaches including data science. A common use case that Quantifi typically sees from clients is leveraging third-party visualisation tools to report on portfolio and risk data. This essentially involves publishing data, not just from Quantifi models, in a format that can be processed by a third-party reporting tool.

Back-testing

A more interesting use case that Quantifi has encountered is back-testing. Here a client might have mixed datasets from diverse sources, coupled with open source tools (Python, Jupiter, Rstudio, etc) and market standard financial model libraries. This creates an ideal platform for back-testing analysis. Back-testing involves large amounts of data along with the financial models that one would use on top of that data. One example of back-testing includes portfolio and product structuring. If a portfolio manager constructs a portfolio or a trader structures a product, before they execute on the portfolio or product they back-test it against current historical data or stressed historical data to anticipate how the portfolio or product would perform.

Trading strategies like algorithmic trading would be an obvious example. Another example would be correlation trading, where you are taking a view on certain risk factors like correlation. In this case you build a structure that is essentially hedging all the other risk factors and only exposing you to correlation risk. This sort of strategy is driven by

risk neutral hedges but traders also need to assess how it would perform in a real-world environment. By back-testing it, they can see if the performance, based on the risk neutral strategy, is closely replicated in the real world. Hedging strategies are common on the buy-side as well as sell-side and a good example would be FX hedge balancing on an intraday or end-of-day basis.

Lastly, these are some of the use cases that are driven by regulation. If a bank qualifies for a model-based regulatory capital approach (as opposed to a standard approach), their models need to be validated regularly. The regulators will ensure that the bank has proper processes in place to validate those models. For example, with FRTB, there are simulation based measures like VaR and Expected Shortfall that would be used if a bank wants to avail itself of the advanced model-based approach. In this instance, one of the conditions is that banks need to regularly back-test those models to ensure that the model is performant. The same applies to measures such as Potential Future Exposure.

Portfolio Construction and Optimisation

Portfolio construction and optimisation is another area where artificial intelligence (AI) and machine learning algorithms are frequently used. By leveraging novel optimisation techniques and multiple structured and unstructured data sources, firms can make better investment decisions. For example, with trading strategies based on price, Quantifi has collaborated with a firm that uses AI and machine learning to forecast bond prices based on data analysis. This AI firm uses Quantifi models for the risk metrics on their platform.

Alternatively, event-based trading strategies involve forecasting defaults, earnings, corporate actions and then structuring portfolios to take advantage of possible arbitrage opportunities when such events occur.

Another option is a weight optimisation strategy where portfolios track benchmarks or model portfolios based on risk metrics like variance, returns, Sharpe ratios, duration, etc, and use AI and machine learning algorithms to make better investment decisions.

To complement and enable these strategies, firms are increasingly seeking out alternative data sources.

There is a wealth of data that is digitised and easily available, and more firms are using web scraping, crowd-sourced data and social media, along with image recognition and natural language processing.

Key Take-Aways

We are currently undergoing a shift towards new data science tools. The current COVID-19 pandemic is likely to accelerate this trend given the need to generate forward-looking insights and support business decisions in a collaborative and time compressed manner. As mentioned in Quantifi's blog, 'How is Data Science Transforming Banking and Capital Markets?', Excel is a tool for ad-hoc analysis and forward-looking simulations. Whilst Excel is not going away anytime soon, there has been a concerted effort to move away from a heavy reliance on Excel due to some of the limitations in performance volumes and a lack of collaborative features in the tool.

Secondly, while the application of data science approaches holds significant promise, there are several caution points and considerations that financial institutions must take into account -the first being that strong data and model management foundations are still very much required. As with any technology solution, it is not a panacea for all of the complex data and analytical challenges that firms may face. The implementation of some of these platforms assumes that there are relatively established data quality processes in place. Most data science tools and platforms are not meant to address fundamental data governance and assurance activities, even though they contain facilities for data handling, data wrangling and management.

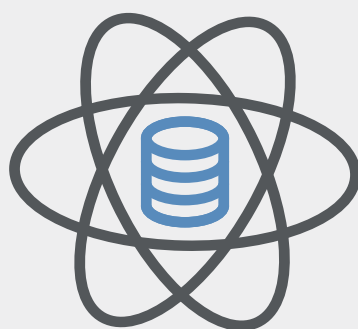
As more advanced analytics and AI based models are deployed, we expect regulators and business stakeholders to require a more appropriate fit-for-purpose model risk governance process. This will not only cover conventional models but also AI based algorithms, especially those that are financially material when embedded within a firm's business decisions. We expect there to be an increased focus on explainable AI as end users and clients will want to understand the nature and insights of a smart algorithm, the underlying data sets and the potential for bias before employing them within their own organisations. Taking this into consideration when designing models will be beneficial as it will save retrofitting costs and provide a platform that can facilitate transparency requirements.

Thirdly, there are non-conventional data sets that will increasingly be used in conjunction with existing structured financial and market data. However, at present, there is still a fair degree of friction around data ingestion and wrangling of new and alternative data sets as they do not originate from the financial sector, so the taxonomies may be different. The efficacy of some of these new data sets and the correlation with prevailing trading and investment patterns will need to be tested and analysed. This must be done in a relatively time compressed manner in order to reduce information commoditisation and prevent time related value decay.

Overall, this all represents an early stage development for where trends are heading and this is still rapidly changing in terms of data science, machine learning technologies and IT practices. People talk about Python, Java and other machine learning languages on the market now - however there are also other languages on the fringe that are being explored: for example Julia. Over the next few years, we expect some of these tools and languages to become less clunky, more industrialised and better streamlined compared to what we have today. These tools will develop more intuitive user interfaces, collaborative features and workflows as well as AI based data quality routines.

In the coming years we anticipate that firms will look for converged, open data science offerings that can integrate new tools, new languages and offer a coexistence of different development stacks. These offerings also provide the opportunity to shield quants and data scientists from low-level features and infrastructure administration activities. For example, some quants are involved with certain administrative aspects of AWS infrastructure however that may not actually be core to what they do. By implementing a platform that could shield them from some of these lower level activities would help in terms of productivity.

With packaged platforms, the net effect is to lower the operational risks and barriers to embracing data science and machine learning deployments. These platforms also better enable firms to scale up and we expect this to play out in the next few years as some of the tools and languages mature and there are more packaged and end-to-end offerings in the marketplace.



ADOPTION OF DATA SCIENCE IN FINANCE

Data has a huge influence on the financial services industry. The volumes of data accumulated are so large that traditional evaluation and analysis methods are no longer suitable. Firms are now recognising that big data technologies, like data science, are the way forward. Using data science can help them focus their resources efficiently, make smarter decisions, and improve performance.

This survey was conducted during a webinar Quantifi hosted, featuring Celent, on 'Next Generation Risk Technology Powered by Data Science'. Over 180 individuals from the financial services industry registered for the webinar and were invited to take part in the survey.

Introduction

Over the course of the last few years, there has been a step change in the role that data and technology is playing in risk management and investment decision making. Powered by data science, data analytic techniques previously considered as emerging or experimental are increasingly being adopted as mainstream. Firms are deploying data science to improve risk assessment and business response strategies, and bring more rigour to their operations.

Firms that are not looking to adopt in-house data science capabilities have the option to leverage technology providers. External providers like Quantifi, who have embedded data science, can offer a range of features including the ability to compose risk analytics, product structuring and testing, hedge construction and development of trading strategies.

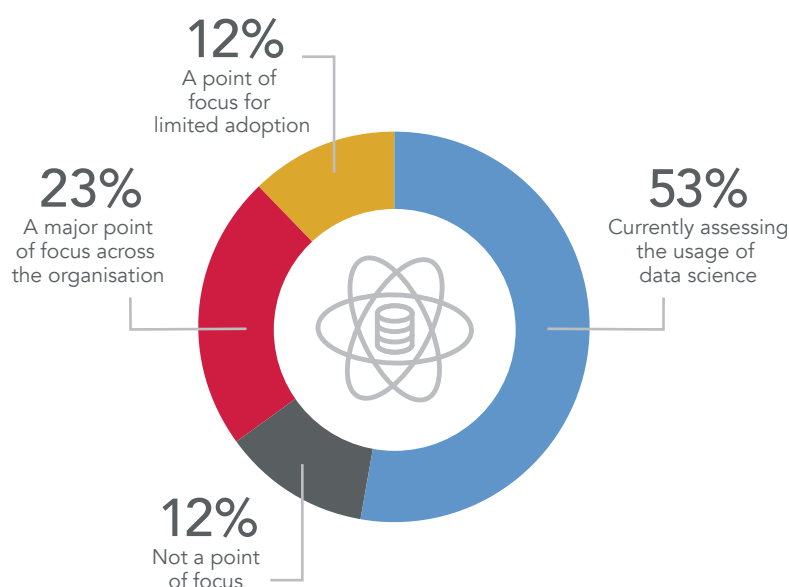
Regardless of the approach taken, it is clear that data science is going to play a pivotal role across a number of business and investment strategies.

How would you describe your firm's strategy for incorporating data science in your investment and/or risk management process?

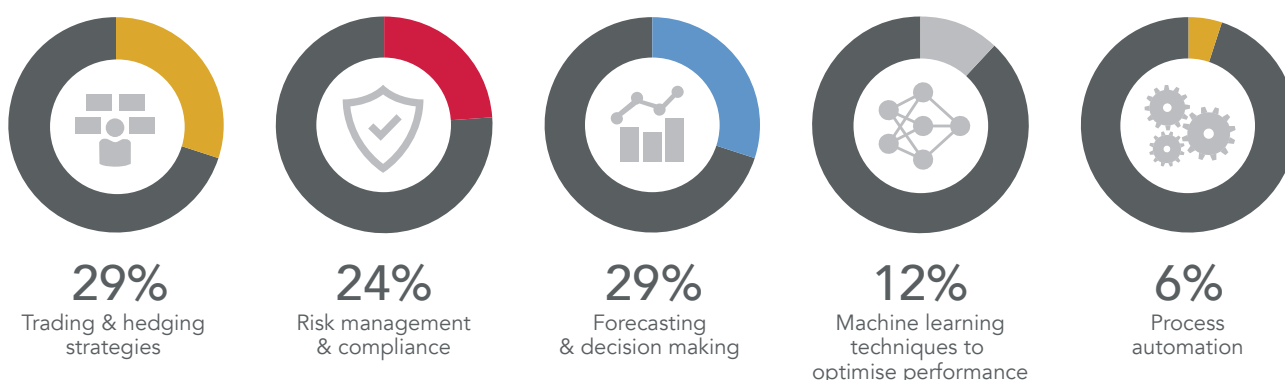
The ability to harness the power of data through data science is extremely valuable as it helps firms understand the nature of risks and cope better with regulations.

Whether or not to incorporate data

science in an organisation is an important strategic decision that requires careful consideration to avoid sub-par results. For 23% of firms surveyed, data science is already a major point of focus across the organisation and for 12% it is a major point of focus for limited adoption. Over half (53%) are currently assessing whether to implement and deploy data science. These firms must ensure they understand what they need and the scope of the tasks to be achieved by using data science tools. Done correctly, data science can offer a competitive advantage by providing valuable insights into new investment opportunities and risk mitigation strategies.



What is the most compelling business case for leveraging data science?

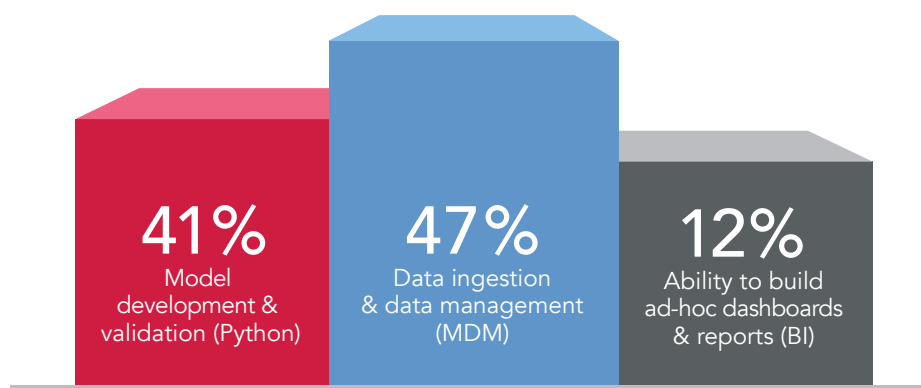


The implementation of data science is rapidly changing the face of the financial services industry. Data science can be applied to perform various important tasks. For example, it has created a new capacity for powerful analysis by traders such as using data science for event based trading strategies by forecasting defaults, earnings and corporate actions and then structuring portfolios to take advantage of possible arbitrage opportunities when an event occurs. Data science uses scientific methods, processes,

algorithms, and systems to extract knowledge from data. Leveraging this data to make major decisions is a key strategic practice for any business. A good example of this is back-testing: if a portfolio manager constructs a portfolio or a trader structures a product, these can be back-tested against historical data or stressed historical data to anticipate how the portfolio would perform. Both forecasting and decision-making as well as trading and hedging strategies ranked as the most (29%) compelling use cases for leveraging data science. Risk management and compliance (24%) was selected as another popular use case with participants.

Risk management and compliance functions are highly dependent on enterprise-grade data and advanced analytics. To support the increased volume of data required, a number of new technologies have emerged to help firms analyse this data. These cutting-edge data science platforms provide a level of sophistication that was not previously possible with traditional methods.

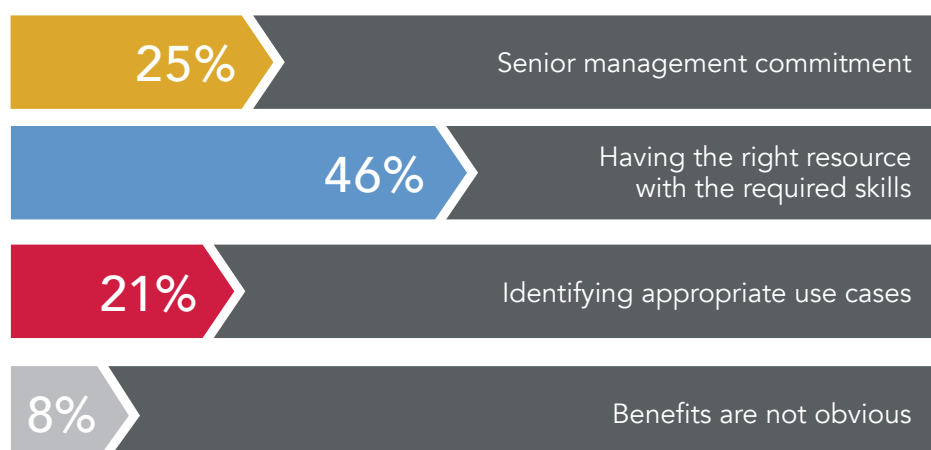
Which data science capability do you consider the most important?



In order to leverage data science and modern machine learning algorithms, it is important to have an infrastructure in place that ensures that data is of a high quality. Almost half (47%) of participants see improving data ingestion and data management (MDM) as the most important capability to develop. The garbage in, garbage out principle applies strongly to machine learning, and ensuring that data is standardised, validated and made accessible throughout the organisation is a pre-requisite to obtaining meaningful results from sophisticated models. Model development and validation (Python) is also considered a key capability (41%), whereas the ability to build ad-hoc dashboards and reports (BI) received the lowest

response (12%). This could indicate that market practitioners are keen to utilise the cutting-edge models and Python libraries that the machine learning community has developed in recent years. These models and libraries go beyond the simple exploratory analysis, summary statistics and dashboards that business analysts have been using for decades. Overall, the findings suggest that rather than rapidly deploying prototypes, firms are working to put in place the right foundational elements to ensure success of their data science projects. This includes focusing on data quality, model explainability and transparency. These components are key in building trust in the model when deploying it for different use cases.

What are the hurdles for the wider adoption of data science?



While the value of data science is becoming more recognised, it is important for firms to realise that adopting this new technology presents a number of hurdles. Respondents cited having resource with the required skills as the biggest hurdle (46%), followed by senior management commitment (25%) and identifying appropriate use cases (21%).

Even with the best data science platform, the success of implementation and results comes from having the people with the right skills who can explore and examine data to find hidden patterns, perform advanced mathematical and statistical

analysis, and present actionable insights. For many firms, the real test will not be in developing capabilities, but the agility by which they can divert and redeploy their resources from everyday work streams.

21% of respondents feel the biggest hurdle is identifying appropriate use cases, although, as the diagram below highlights, there are a number of use cases across markets trading and risk, banking, investment management and non-financial risk activities.

Market Risk & Trading	Investment Portfolio Design & Modelling	Banking Book Financial Risk	Non-Financial Risk & Compliance
<ul style="list-style-type: none"> Product structuring & testing Hedge design, construction & testing Testing of algo trading strategies 	<ul style="list-style-type: none"> Portfolio construction & optimisation Quantitative research & investment modelling 	<ul style="list-style-type: none"> Balance sheet forecasting Enterprise stress test production (e.g. CCAR) Credit provisions modelling (e.g. CECL, IFRS9) 	<ul style="list-style-type: none"> KYC, AML and fraud detection & investigations Operational risk assessment & monitoring Regulatory reporting & submissions

What are the risks with adopting data science
i.e. shadow IT, key person risk, security & privacy, other?
Please provide a short answer.



The successful implementation of data science capabilities will depend on a firm's responsiveness and agility from people, process, and infrastructure standpoints. As with any emerging and disruptive technology, firms need to strike the right balance between innovation and risk management.

The statements above are a selection of responses from participants and highlight the most commonly voiced concerns about the adoption of data science from the survey. The race to adopt new technologies poses a level of risk. The most common risks associated with adopting data science, as noted by survey respondents, are key person risk and IT security and privacy.

Conclusion

The last decade, especially the past five years, has seen the rise of symbiotic, emerging technologies and next-generation approaches which are fanning the flames of innovation and change across the financial industry and beyond. Financial services and their risk management functions have always been a participant in, as well as a beneficiary of, technology advancements. However, with the current shift in emerging technologies, this is both a source of risk, as well as an enabler, for many institutions. The deployment of data science techniques provides a huge opportunity for firms to stand out from the competition and reinvent their businesses. Implementation of data science in an organisation requires a dedicated strategy to avoid sub-par results and information overload. When done correctly, it can offer a competitive advantage, insights and even new ways to tackle old problems.

MANAGING LIQUIDITY RISK IN TIMES OF STRESS

Historically, liquidity risk has been the poor cousin of market risk and credit risk. While the global financial crisis of 2008/2009 first pushed the issue of liquidity risk to the forefront of attention, the most recent market dislocation due to the COVID-19 pandemic has once again highlighted the salient significance of the topic.

This is particularly so for institutional investment managers who have to meet margin calls, perform regular fund rebalancing, execute redemptions, among other potentially liquidity-threatening activities. Failure to afford liquidity risk management the focus and priority jeopardizes the health of an institution, perhaps fatally so.

Pension funds and other institutional asset managers tend to look at their liquidity risk in two different ways: through the prism of market liquidity and through the prism of funding liquidity. From a perspective of market liquidity, asset managers need to monitor their available liquidity in the future, particularly in the near-term.

Funding liquidity, in contrast, involves the capacity to project all possible cash flows and cash balances, as well as identifying potential funding gaps.

Both these functions are highly germane to the effective functioning of any financial institutions.

In the wake of the great financial crisis, and as part of the 2010 Basel III banking reforms, the Basel Committee on Banking Supervision (BCBS) introduced both the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). These were designed to improve the resilience of banks to short-term liquidity crunches of the kind which had been so damaging in 2008 and 2009.



The LCR was structured to ensure that banks possess enough high quality liquid assets (HQLA) to survive a period of market dislocation and illiquidity lasting 30 calendar days. A 30-day period is deemed to be the minimum necessary to allow the bank's management enough time to take remedial action.

The NSFR, however, is designed to fortify a bank's liquidity over a longer time period and seeks to do so by incentivising banks to rely on more stable sources of funding rather than often illiquid assets. In May 2016, the Federal Deposit Insurance Committee (FDIC) also introduced a proposal to create a net stable funding ratio that would "implement a liquidity requirement consistent with the NSFR..."

From September 30th 2020, under new rules introduced by the European Securities and Markets Authority (ESMA), EU fund managers must employ liquidity stress-testing tools to better insulate themselves in times of market dislocation. The regulator puts particular emphasis upon the ability of investment funds to meet redemptions.

In these periods, margin calls are increasing as asset values depreciate, but market liquidity is also drying up. Assets which might have taken a day or two to liquidate can now take 10 or 15 days and then only with a much increased haircut. Asset managers are caught in the rip tide.

There are two types of margin call: variation margin and initial margin. Both forms of margin increase, and sometimes dramatically, during periods of market dislocation and volatility.

For example, in the worst days of the recent COVID-19 sell-off, some instruments witnessed their biggest price movements in three decades, and initial and variation margin spiralled higher. Recent data released by the Bank of England shows that in March, the daily variation margin calls by UK central counterparties were up to five times higher than seen in January and February.

The amount of initial margin required by central counterparties also increased dramatically, hitting a peak which was 31% higher than the average margin seen earlier in the year.

Only the most sophisticated
and powerful engines can
handle the requirement to
accumulate and assess
enough data, and the right
type of data, to underpin a
single view, automated,
dynamic liquidity risk platform.

Margin calls appear to have done their job: central counterparties were protected and derivatives markets continued to function during the recent crisis. But, funding those margin calls created considerable stress as banks and asset managers scrambled to find sources of liquidity. Rather worryingly, the Bank of England noted, "This contributed to a 'dash for cash' in March 2020, as some market participants appeared to have insufficient buffers of cash-like assets to meet actual or anticipated margin calls."

It is not that market participants are indifferent to the urgency of liquidity risk management and its relevance during market stress - it is that effective risk management is acutely difficult to perform comprehensively.

The asset management industry has realised that static stressed-scenario liquidity testing is not sufficient to meet demands in a period of market dislocation. Consequently, it has, with the larger players leading the pack, moved to a dynamic, multi-period stress testing methodology.

For example, in the real world, asset managers are bound by their mandate and documentation to rebalance portfolios according to pre-determined models or risk parameters.

Consequently, a multi-event stress scenario is required to more adequately reflect the reality of husbanding liquidity during periods of dislocation. The institution must possess sufficient liquidity to be able to withstand several cycles of the same crisis but in different forms.

Alternatively, funds modelling their capacity to withstand multiple redemptions might incorporate a series of shocks, such as, the collapse of a major market-maker. Historically, this has caused extreme redemption levels of 15% or 20% of total assets and adverse external market shocks such as an unexpected hike to interest rates.

A multiple scenario and rebalancing strategy, according to designated rules, can also incorporate opportunities for tilting - that is to say evaluation of possible market openings for trading gain. Comprehensive and efficient liquidity stress-testing is a win/win.

But, while the theory might be acknowledged, the practice, at the majority of investment funds, is still intermittent, idiosyncratic and largely manual. Those in the industry speak of a couple of staffers getting together in an office every two or three months with only an Excel spreadsheet for company - and this is even at larger funds. The process is wasteful and costly, and often prone to human error.

What is required is an automated, integrated and single view of liquidity risk across multiple asset classes in all markets. This single platform, operated in a central location, would have the capacity to run forward-looking liquidity analysis, calculate and report liquidity risk exposure, which takes into account all potential future obligations.

Such a platform would produce much more effective, continuous and consistent liquidity risk data. It would also free up the staff currently employed in such work to more valued-added deployment.

As is nearly always the case in the development of state-of-the-art solutions, the development of robust analytics presents a big headache but the accumulation of data of sufficient granularity and depth presents an even bigger one. This is particularly true in the case of, say, a sovereign wealth fund which possesses a plurality of different asset types but might not face any liabilities or dispersals for the next 20 or 30 years.

Only the most sophisticated and powerful engines can handle the requirement to accumulate and assess enough and the right type of data, to underpin a single view, automated, dynamic liquidity risk platform. Such an engine needs to be able to gather data from a variety of different sources. It is this that makes automation possible, and can produce a solution that can then be calibrated and indexed according to the internal priorities of the institution in question.

Proper evaluation and provision of liquidity risk is not a quick fix; it requires diligent contemplation of needs, and a reliable partnership with the right technology and data provider. COVID-19 has reshaped many of our previously firmly held beliefs about life and the workplace; it might also be the case that it has justly refocused attention upon the pressing need to tackle liquidity risk management.





QUANTIFI WINS **FINTECH BREAKTHROUGH AWARD** FOR BEST RISK MANAGEMENT PLATFORM

Quantifi has been recognised as Best Risk Management Platform at the FinTech Breakthrough Awards. These annual awards recognise the most innovative companies across the FinTech industry and attracted over 3500 nominations this year.

As the FinTech landscape continues to evolve at an accelerated pace, the years ahead will mark an important transition period for the capital markets industry. Many in the industry are expecting significant technology disruption. AI, data science, microservices and in-memory computing are some of the most disruptive technologies redefining the future of the industry and have the potential to make a huge impact.

At Quantifi, open innovation plays a key role in developing technology that satisfies its clients' demands for ultra-fast, flexible technology that can harmonise operations and drive efficiencies. Quantifi's forward-thinking approach and pace of innovation has a major impact on its ability to turn around enhancements and introduce new features. This approach provides clients with the latest innovations and gives them considerable competitive advantage.

Quantifi's integrated solution delivers cross-asset trading, front-to-back operations, position management, market, credit, counterparty and liquidity management, margining, and regulatory reporting. As well as supporting key regulatory and industry practices, Quantifi applies the latest technology innovations

"WE ARE DELIGHTED TO HAVE WON THIS AWARD, WHICH HIGHLIGHTS OUR COMMITMENT TO EMBRACING NEW TECHNOLOGIES IN ORDER TO DELIVER NEW INNOVATIVE SOLUTIONS."

to provide new levels of usability, flexibility, and ease of integration.

"At Quantifi we are always looking for ways to take advantage of new technologies that can give our clients the opportunity to boost flexibility, scale efficiencies and reduce operational complexity," comments Rohan Douglas, CEO, Quantifi. We are delighted to

have won this award, which highlights our commitment to embracing new technologies in order to deliver innovative solutions. By leveraging new technologies we are making an important contribution to advancing how our clients operate." Rohan Douglas, CEO, Quantifi



Next Generation Risk Technology Powered by Data Science

Regulators, internal stakeholders, customers and investors are demanding more transparency with understanding of front office, risk, and capital models. Transparency demands are required not only at an analytical level, but also in development workflows and lifecycle activities associated with risk models and data. With these developments, one imperative that we believe to be significant in the coming years is the emergence of next-generation risk technology powered by data science approaches.



<https://www.quantifisolutions.com/next-generation-risk-technology-powered-by-data-science>



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About Quantifi

Quantifi is a provider of risk, analytics and trading solutions. Our award-winning suite of integrated pre and post-trade solutions allows market participants to better value, trade and risk manage their exposures and respond more effectively to changing market conditions.

Quantifi is trusted by the world's most sophisticated financial institutions including five of the six largest global banks, two of the three largest asset managers, leading hedge funds, insurance companies, pension funds and other financial institutions across 40 countries.

Renowned for our client focus, depth of experience and commitment to innovation, Quantifi is consistently first-to-market with intuitive, award-winning solutions.

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